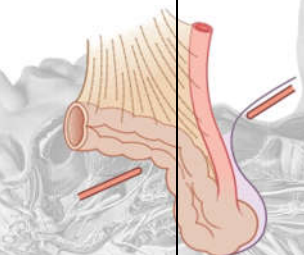
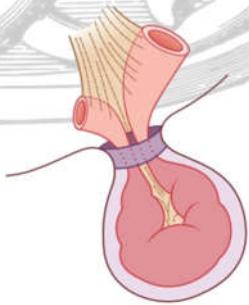
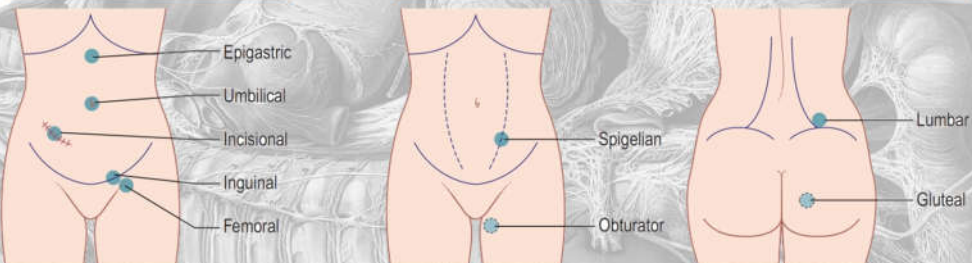


*S*a hernia

Definition	<ul style="list-style-type: none"> - Abnormal protrusion of a viscous or a part of a viscous through a defect in the wall of the cavity containing it. - Hernia means to rupture (Latin). 	
Incidence	<ul style="list-style-type: none"> - 15% of males and 5% of females will develop groin hernia. - Inguinal hernia is the most common hernia (73%) because: <ul style="list-style-type: none"> 1. the muscular anatomy in the inguinal region is weak 2. the presence of natural weakness like deep ring and cord structures - Incisional hernia is next to inguinal hernia in occurrence. - The commonest type of hernia regardless of the sex is IIH. 	
Etiology	<ol style="list-style-type: none"> 1. Chronic cough: Chronic bronchitis & bronchial asthma. 2. Chronic constipation 3. Urinary causes: • Old age → BPH • Young age → stricture urethra • Very young age → meatal stenosis. 4. Straining & Lifting of heavy weight. 5. Ascites & Organomegaly 6. Appendicectomy through Mc Burney's incision may injure the ilioinguinal nerve causing right sided direct inguinal hernia(DIH). 7. Congenital mesenchymal defect (Weak theory) 	
Pathology Or parts of the hernia	<ol style="list-style-type: none"> 1. Defect: 2. Sac: 3. Coverings: 4. Contents of the Sac: 	<ul style="list-style-type: none"> - Congenital or acquired - Peritoneal pouch that bulges through the defect • Parts of the sac: <ol style="list-style-type: none"> a. Neck: the narrowest part of the sac Neck is <i>narrow</i> → indirect sac but <i>wide</i> → direct b. Body: • <i>thin</i> in infants & children & indirect sac • <i>thick</i> in direct & long-standing hernia c. Fundus. - the layers of the abdominal wall through which the sac passes. • Omentum → Omentocele (Epiplocele). • Intestine → Enterocoele; commonly <i>small</i> bowel, but sometimes even large bowel. • Richter's: a portion of circumference of bowel is the content. • UB or Colon: <u>Sliding hernia</u>. • Ovary, often with <u>fallopian tube</u>. • Meckel's diverticulum: <u>litter's hernia</u>. • Fluid: <u>Hydrocele of hernia sac</u>.
<p><u>Sliding hernia</u></p> 		
<p>N.B:</p> <ul style="list-style-type: none"> • if the content is UB: <ul style="list-style-type: none"> - When you press on it the pt feels a desire to micturate - It decreases in size after micturition • if the content is Appendix: <ul style="list-style-type: none"> - Don't remove it for fear of soiling of the field - But if inflamed must be removed 		

	Enterocoele	Omentocele
	<i>First part is difficult to reduce but last part is <i>easier</i>.</i>	<i>First part is <i>easier</i> to reduce but last part is difficult</i>
	Gurgling sound on reduction	a <i>doughy</i> feeling
	Resonant on percussion	<i>Dull</i> on percussion
	Bowel sounds may be heard	Bowel sounds <i>not</i> heard
	Peristalsis is seen	<i>No</i> peristalsis seen
N.B	<ul style="list-style-type: none">• Hernia without neck: Those hernias with larger mouth lack a neck → direct hernia & incisional hernia.• Hernia without sac: Epigastric hernia it is protrusion of extraperitoneal fat through linea alba.• No sac → No impulse on cough	
complications	<p>In order:</p> <ol style="list-style-type: none">1. Irreducibility2. Obstruction3. Strangulation4. Inflammations5. Hydrocele of hernia sac 	
Types	<ul style="list-style-type: none">• Groin hernias: <ol style="list-style-type: none">1. <i>Indirect</i> inguinal hernia (IIH).2. <i>Direct</i> inguinal hernia (DIH).3. <i>Femoral</i> hernia.4. Obturator hernia.	<ul style="list-style-type: none">• Ventral hernias: <ol style="list-style-type: none">1. <i>Incisional</i> hernia2. <i>Umbilical</i> hernia3. <i>Para-umbilical</i> hernia4. <i>Epigastric</i> hernia5. Fatty hernia linea alba6. Spigelian hernia
	<ul style="list-style-type: none">• Rare types of hernia: <ol style="list-style-type: none">1. Gluteal hernia2. Sciatic hernia3. Perineal hernia4. Lumbar hernia 	

A strangulated hernia

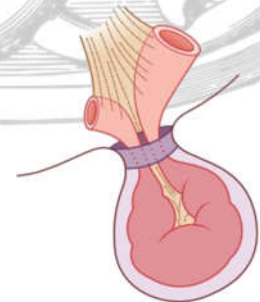


Fig. 14.1 The sites of hernias.

A. Groin Hernias		
1. Indirect inguinal hernia (IIH).		
Incidence	<ul style="list-style-type: none"> • The Commonest type of hernia <i>regardless of the sex</i>. • Age: It is more common in younger age group <i>as compared to direct inguinal hernia which is more common in elderly</i>. • It is more common on right side in 1st decade but in 2nd decade the incidence is equal on both sides. • Hernia is Bilateral in 30% of cases. 	
Etiology	<p>1. Congenital: <u>Unobliterated processus vaginalis (Preformed sac)</u></p> <p>2. Acquired: <u>Widening of Deep ring & Weakness of fascia transversalis.</u></p> <p>Q: How to differentiate the Congenital cause from Acquired cause?</p> <ul style="list-style-type: none"> • Congenital → the testis lies within the sac & Not separable from it. • Acquired → The testis is separated from the sac & lies behind it. 	
Pathology	<p>1. Defect:</p> <p>2. Sac:</p> <p>3. Content</p> <p>4. Covering:</p>	<p>Stretched deep inguinal ring</p> <ul style="list-style-type: none"> - Present inside the cord covering & Anterolateral to Vas & Vessels - Neck is <u>narrow</u> & lies lateral to inferior epigastric vessels (MCQ) - Small intestine & omentum or both - from inside out Extraperitoneal tissue Internal spermatic fascia Cremasteric muscle & fascia External spermatic fascia Scarpa's & Camper's fascia Skin <p>N.B:</p> <p>If IIH descends into the scrotum it will have the same covering but Scarpa's & Camper's fascia replaced by Dartos muscle & Colie's fascia (No fat in Scr.)</p>
types	<p>1. Bubonocoele: (Bubon = Groin in greek)</p> <ul style="list-style-type: none"> - The hernia is limited to inguinal canal. - Seen as a groin swelling with short Hx. <p>2. Funicular:</p> <ul style="list-style-type: none"> - The sac exits through the SIR but limited to the Neck of scrotum - Contents of the sac can be felt separately from testis, which lies below the hernia. <p>3. Complete (Scrotal): (Worst type☺)</p> <ul style="list-style-type: none"> - The hernia descends into the bottom of the scrotum - The testis is behind the hernia & difficult to locate 	

C/P	<p>•C/P of a Swelling:</p> <ol style="list-style-type: none"> 1. Groin Swelling (anatomical site hernia) 2. Reducible 3. Showing expansile impulse on Cough. <p>•C/P of Complication</p> <p>•C/P of ppt. factors</p> <p>Q: Swellings that show Expansile impulse on cough?</p> <ol style="list-style-type: none"> 1. Hernia 2. Laryngocele 3. Meningocele 4. Empyema necessitans
DDx	<p>DDx of a groin Swelling:</p> <ol style="list-style-type: none"> 1. Inguinal lymphadenitis (Most common) 2. Hernia: a. IHH b. DIM c. Femoral hernia 3. Femoral A. aneurysm 6. Saphena varix 7. Psoas abscess 8. Undescended testis 9. Lipoma of the cord 10. Sebaceous cyst & Lipoma & Dermoid cyst. <p>N.B:</p> <p>In Exam you must mention the eminent feature of the above mentioned DDx.</p> <p>For example: Saphena varix</p> <ol style="list-style-type: none"> 1. Compressible & Bluish 2. Thrill on cough 3. Associated with V.V in LL.
Ix	<p>Routine Preoperative Investigations:</p> <ul style="list-style-type: none"> - CBC - Coagulation profile: PT & PPT - RFT & LFT - ECG if the pt. above 40s <p>Investigations For ppt. factors:</p> <ul style="list-style-type: none"> - Plain chest X-ray - US abdomen & pelvis
Treatment	<p>1. Treatment of the ppt factors: (otherwise recurrence is the rule)</p> <ul style="list-style-type: none"> -TURP in BPH - TT of chronic cough - Stop smoking - weight reduction. <p>2. Surgical treatment:</p> <ol style="list-style-type: none"> a. Hernio-tomy: Trasnfixation & ligation and excision of the sac. b. Hernio-rrhaphy: Strengthening of the posterior wall to the inguinal canal by local tissue. c. Hernio-plasty: Strengthening of the posterior wall of the inguinal canal by <i>Prosthetic mesh</i>.

	<p>►In adult inguinal hernia we Do Herniotomy plus Herniorrhaphy or Hernioplasty.</p> <p>►In infants: Whether it is hernia or hydrocele, only herniotomy is done through inguinal approach (Michaelis plank operation),</p> <p>►Hernioplasty is the present choice (ideal) for all inguinal and groin hernias</p>
a. Herniotomy	
Definition	<i>Trasnfixation & ligation and excision of the sac.</i>
Anaesthesia	Spinal or G/A or local anaesthesia
	The skin is incised 1.25 cm above and parallel to the medial two/ third of inguinal ligament.
Procedure	<p>o Two layers of superficial fascia (outer Camper's fascia and inner Scarpa's fascia) are incised.</p> <p>o External oblique aponeurosis is incised. Upper leaf is reflected above and lower leaf is reflected downwards to visualize and expose the inguinal ligament.</p> <p>o Ilioinguinal nerve is safeguarded (MCQ).</p> <p>o Cremasteric muscle is opened & Cord structures are dissected,</p> <p>o Sac which is <i>anterior</i> and <i>lateral</i> to cord is identified → <i>pearly white</i> in colour.</p> <p>o Dissection is usually started from the fundus and extended towards the neck which is identified by: (IMP)</p> <ol style="list-style-type: none"> 1. Extraperitoneal fat. 2. It is the narrowest part of the sac 3. Lateral to <i>inferior epigastric artery</i>. <p>o Sac is opened at the fundus, finger is passed to release any adhesions.</p> <p>o Sac is twisted so as to prevent the content from coming back,</p> <p>o It is transfixed using absorbable suture material (<i>chromic catgut 2-0</i> or <i>vicryl</i>) and is excised distally.</p>
b. Herniorrhaphy	
1. Modified Bassini	<p>• <i>Conjoint tendon</i> and <i>inguinal ligament</i> are <u>approximated</u> Using; <u>interrupted nonabsorbable monofilament sutures</u> [[polypropylene (prolene, blue in colour)]]</p> <p>1.<u>Interrupted</u> as Continuous sutures compromises the blood supply and interferes with proper healing; and strength will not be as adequate as interrupted sutures</p> <p>2.<u>Nonabsorbable</u> to maintain adequate tensile strength.</p> <p>3.<u>Monofilament</u> as Multifilament suture material like silk may precipitate infection and tensile strength is not as good as monofilament.</p> <p>• Medial most stitch is taken from the periosteum of pubic tubercle [called as <i>key</i> or <i>Bassini's stitch</i>].</p> <p>• External oblique is closed and other layers are also closed.</p>

	<p>N.B:</p> <ul style="list-style-type: none"> Absorbable suture material like catgut should not be used as 50% of its tensile strength will be lost in 7 days. In direct hernia, sac is usually not opened but in indirect hernia, sac is always opened. 						
	<table> <tr> <th>Original Bassini</th><th>Modified Bassini</th></tr> <tr> <td>He opened the fascia transversalis from pubic tubercle to deep ring</td><td>Fascia transversalis not opened</td></tr> <tr> <td>Approximated with interrupted stitches of silk</td><td>Approximated with Prolene suture</td></tr> </table>	Original Bassini	Modified Bassini	He opened the fascia transversalis from pubic tubercle to deep ring	Fascia transversalis not opened	Approximated with interrupted stitches of silk	Approximated with Prolene suture
Original Bassini	Modified Bassini						
He opened the fascia transversalis from pubic tubercle to deep ring	Fascia transversalis not opened						
Approximated with interrupted stitches of silk	Approximated with Prolene suture						
2. <i>Lytle repair</i>	<ul style="list-style-type: none"> Narrowing of Internal ring by placing interrupted Vicryl sutures over the medial side of the ring to the transversalis fascia. Avoid excessive narrowing of the ring by allowing it to admit the tip of the little finger → to avoid testicular atrophy. 						
3. <i>Shouldice</i>	<ul style="list-style-type: none"> After doing herniotomy, transversalis fascia is incised along the line of the wound from deep ring to pubic tubercle. Lower flap of fascia is sutured to <i>posterior</i> part of the upper flap. Upper flap is sutured to the inguinal ligament. <p>It causes double-breasting of the transversalis fascia MCQ.</p> <ul style="list-style-type: none"> Then conjoint tendon and inguinal ligament is further approximated by two layers of continuous sutures. External oblique aponeurosis is sutured in two layers (double-breasting) in front of the cord. Hence the original Shouldice repair is 6 layered procedure: [First two layers] of <i>transversalis fascia</i>, [next two layers] of <i>conjoint tendon</i> and [last two layers] of <i>external oblique aponeurosis</i>. 						
4. <i>Modified shouldice</i>	<ul style="list-style-type: none"> It involves double-breasting of the <i>transversalis fascia</i> like in Shouldice repair and single layer closure of the <i>external oblique aponeurosis</i> without any additional two-layered repair of conjoint tendon to inguinal ligament. 						
5. <i>Mc Vay operation</i> (Cooper's Ligament Repair)	<ul style="list-style-type: none"> It is repair by placing interrupted sutures: <ol style="list-style-type: none"> Medially → Between <i>Transversalis fascia</i> to Copper's ligament (superior pubic ligament) starting from pubic tubercle medially towards femoral sheath Laterally → Between <i>Transversalis fascia</i> and ilio-pubic tract up to the entrance of cord is reached. <ul style="list-style-type: none"> It requires relaxing vertical incision at the lateral border of the anterior rectus sheath, from pubic tubercle point extending superiorly for 4 cm. This relaxing incision <i>to reduce post.op pain & tension</i>. <p>N.B:</p> <ul style="list-style-type: none"> It covers all three groin defects → indirect, direct and femoral. (MCQ) It is useful in strangulated femoral hernia as it provides obliteration of femoral ring without the use of mesh. 						

Complications Of Herniorrhaphy	<ol style="list-style-type: none"> 1. Haemorrhage 2. Haematoma & seroma 3. Infection (1-5%) 4. Haematocele 5. Post-herniorrhaphy hydrocele, lymphocele 6. Hyperaesthesia over the medial side of inguinal canal due to injury to ilio-hypogastric nerve— neuralgia (15%) 7. Recurrence (10-15%) 8. Osteitis pubis 9. Injury to urinary bladder/bowel 10. Testicular atrophy
c. Hernioplasty	
Definition	It is Strengthening of the <i>posterior</i> wall of the inguinal canal by <i>Prosthetic mesh</i> .
Mechanism	<ul style="list-style-type: none"> • It allows and supports good fibroblast proliferation which in turn strengthens the weak posterior wall of inguinal canal or abdominal wall. • With time it becomes a part of the Abdominal wall.
Types	<ol style="list-style-type: none"> 1. Synthetic: <ol style="list-style-type: none"> a. <i>Non-absorbable:</i> Prolene mesh (white in colour) & Dacron mesh. Marlex mesh & Mersilene mesh. b. <i>Absorbable :</i> Vipro mesh & Ultrapro mesh 2. Biological: Tensor fascia lata & temporal tascia & skin.(not used now) <p>N.B:</p> <ul style="list-style-type: none"> • Presently biological materials are not well-accepted as infection is common and its efficacy is not proved).
Indications	<ol style="list-style-type: none"> 1. <i>Direct</i> hernia & <i>Indirect</i> hernia. 2. <i>Recurrent</i> hernia & <i>Re-recurrent</i> hernia. 3. <i>Incisional</i> hernia. 4. <i>Old</i> age. 5. Hernia with <i>weak abdominal muscle tone</i>. 6. <i>Sliding</i> hernia. <p>N.B: • Nowadays, It is the standard treatment of hernia.</p>
Principles	<ul style="list-style-type: none"> • Size of the mesh should be <i>bigger</i> than the size of the defect. • Mesh should be fixed <i>above</i> and <i>below</i> to the conjoint tendon and inguinal ligament or abdominal wall using <u><i>interrupted, nonabsorbable</i></u> sutures. • Absolute haemostasis and control (prevention) of infection is important • Meticulous care of ilioinguinal nerve in order not to be trapped by the mesh → Mesh Inguinodynia.

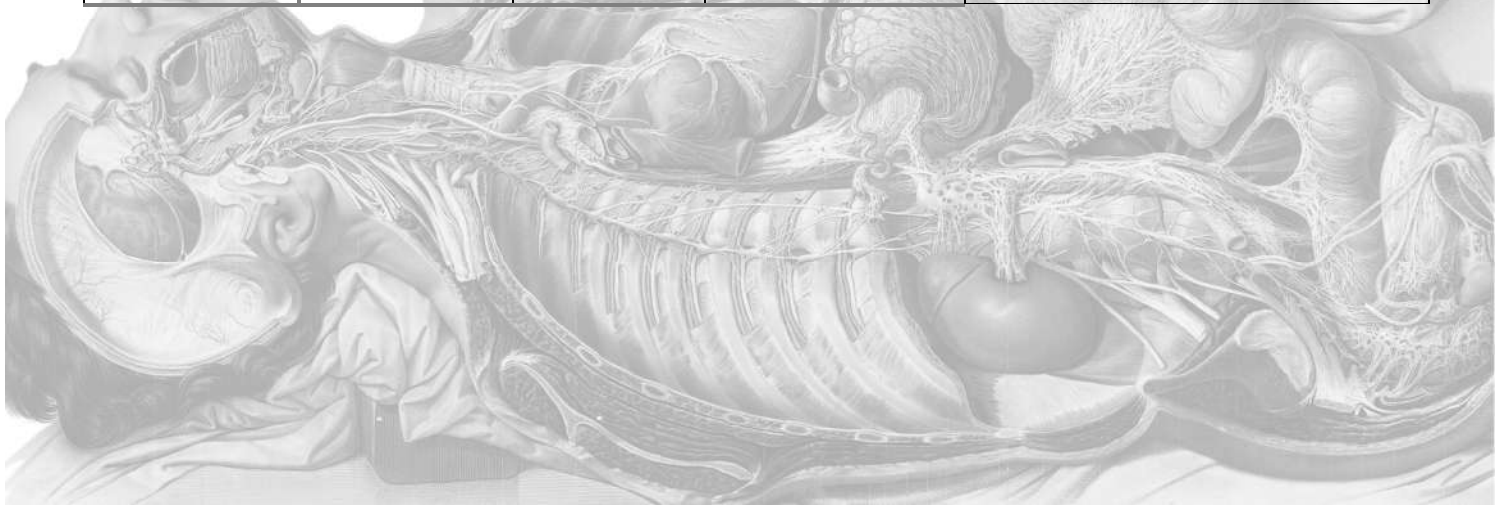
<p>Types of mesh according to the <i>site</i> of mesh placement</p>	<p>1. Onlay (<i>overlay</i>) mesh:</p> <ul style="list-style-type: none"> - the meshes is placed <i>in SC tissue over</i> the <i>musculoaponeurotic layer</i>. <p>o <u>Advantage:</u></p> <ul style="list-style-type: none"> - The mesh is placed outside the abdominal cavity, avoiding direct interaction with the abdominal viscera. <p>o <u>Disadvantage:</u></p> <ul style="list-style-type: none"> - large subcutaneous dissection → increased likelihood of seroma formation. - Superficial location of the mesh → contamination if the incision becomes infected. - The repair is usually under tension. <p>2. Inlay mesh:</p> <ul style="list-style-type: none"> - The mesh is placed <i>within</i> the defect & secured to the fascial edge without overlap. - This results in a predictably high recurrence rate, because the synthetic often pulls away from the fascial edge because of increased intra-abdominal pressure. <p>3. Sublay mesh:</p> <ul style="list-style-type: none"> - the mesh is placed behind the muscle layer in pre-peritoneal space. - it need not to be fixed as abdominal pressure keeps it is position. <p>4. Underlay mesh [Intra-peritoneal] :</p> <ul style="list-style-type: none"> - Under the <i>peritoneum</i> directly over the content. - There are chances of adhesions/fistula formation. - It is used in <i>laparoscopic</i> repair. - Dual mesh/ four-layered mesh is used to avoid adhesions with the content <p>5. PHS (<i>Prolene Hernia System</i>) repair:</p> <ul style="list-style-type: none"> - on-lay and sub-lay → <i>Sandwich technique</i>.
<p>Complication s of Mesh repair</p>	<p>1. Infection</p> <p>2. Mesh extrusion</p> <p>3. Foreign body reaction</p> <p>4. Mesh inguin-odynia:</p> <p><i>hyperesthesia</i> and <i>pain</i> along the distribution of ilio-inguinal or ilio-hypogastric nerves.</p> <p>5. Mesh erosion into bladder, bowel or vessels can occur occasionally (rare).</p>
<p>Notes</p>	<ul style="list-style-type: none"> • <i>Prolene</i> mesh is commonly used at present. • In IIH & DIH → <i>Lichtenstein Onlay</i> tension free mesh repair. • In strangulated hernia or in presence of sepsis, the mesh is <i>not</i> used, only tissue repair is done (<i>herni-o-rrhaphy</i>)

Laparoscopic Hernia Repair		
Indications	1. Recurrent Hernia 2. Bilateral inguinal hernia	
Types	Totally Extra -peritoneal Repair (TEP)	Trans-abdominal Pre -peritoneal Mesh Repair (TAPP)
	Peritoneal cavity is not entered, we create extraperitoneal space to reach the preperitoneal space.	Approach: By entering the peritoneal cavity
	• Advantages: -As we go totally extraperitoneal no chance of intra-abdominal visceral injuries - Easy recovery	• Advantages: - Easy for the beginners - Can be done for those people who had open prostatectomy.
	• Disadvantage: -Difficult training course. Needs a lot of training	• Disadvantage: - Chance of visceral injuries more than TEP
Complications of TEP/ TAPP	SC emphysema Pneumothorax, hypercarbia Vascular Neural Visceral Infection, ileus Conversion Recurrence	
N.B	In both TEP & TAPP we put a <i>mesh</i> in the pre-peritoneal space (MCQ)	
Complications Of hernia	• In order: 1. Irreducibility 2. Obstruction 3. Strangulation 4. Inflammations 5. Hydrocele of hernia sac	
1. Irreducibility		
Definition	Failure of reduction of the content back to the abdominal cavity	
Etiology	1. Adhesions: - Sac to sac - Sac to content - Content to content 2. Relative narrowing of the ring: Overcrowding of the content N.B: Irreducibility predisposes to → Obstruction & Strangulation	
C/p	The hernia <u>cannot</u> be reduced but the swelling is not tender or tense and there is an expansile impulse on cough (Only irreducible)	
Treatment	Surgical repair as early as possible (not as urgent as Strangulation) But repair should be done as Irreducibility predisposes to → Obstruction & Strangulation	

2. Obstruction	
Definition	Failure of the flow of the intestinal contents inside the herniated loop <i>without</i> interference of the blood supply.
Etiology	<p>1. Obstruction from <i>inside</i>: fecalith. (Incarcerated hernia)</p> <p>2. Obstruction from <i>outside</i>: Band of adhesion.</p> <p>N.B:</p> <ul style="list-style-type: none"> • Incarcerated hernia: The lumen of the portion of colon occupying a hernia sac is blocked with faeces & the content of the bowel can be <i>indented</i> with the finger. (Moulding sign or indentation sign) -In incarcerated hernia, sac and contents are densely adherent to each other (contents are fixed to sac). =It is always irreducible; often obstructed but may not be strangulated.
C/p	<p>1. Locally:</p> <ul style="list-style-type: none"> - Hernia is irreducible - Impulse on cough - Slightly tender or not tender - Not tense <p>2. C/p of IO: (4 Cardinal features of IO)</p> <ul style="list-style-type: none"> - Abdominal distension - Colicky pain - Vomiting - Absolute constipation: No faeces and flatus
Golden Rules	<ul style="list-style-type: none"> • In any Case of IO <u>you have</u> to Examine hernia Orifices. • The Differentiation between Obstruction & Strangulation is clinically difficult, So Both are Considered as Surgical emergency.
Ix	<p>Routine + electrolytes plus:</p> <ul style="list-style-type: none"> - PXR abdomen Standing position: Multiple air fluid level
Treatment	<p>1. Proper preoperative preparation of the Pt (See strangulated hernia)</p> <p>2. Urgent Surgery for fear of Strangulation.</p>

3. Strangulation	
Definition	Interference with the blood supply of the content of the sac with or without obstruction.
Incidence	1. Femoral 30% → The commonest hernia to strangulate. 2. Umbilical 20% 3. IIH 5 %
Etiology	1. Sharp edge of the <i>Defect</i> : Edge of deep ring or SIR in OIH Edge of Lacunar ligament in FH Defect of Linea alba in PUH 2. Narrow neck in relation to the content: <i>Relative narrowing of the ring</i>
Pathology	<p>Obstruction</p> <p>↓</p> <p>Initially <i>venous</i> return is impaired</p> <p>↓</p> <p>Congestion of the bowel</p> <p>↓</p> <p>Further dilatation of the bowel which becomes purple coloured</p> <p>↓</p> <p>Fluid collects in the sac</p> <p>↓</p> <p>Eventually <i>arterial</i> blood supply is impaired</p> <p>↓</p> <p>Bowel becomes dark, brownish black coloured with flabby and friable wall</p> <p>↓</p> <p>Bacteria migrate transerosally and multiply in fluid of the sac</p> <p>↓</p> <p>Perforation occurs at the site of constriction ring</p> <p>↓</p> <p>Peritonitis occurs</p> <ul style="list-style-type: none"> • Gangrene may occur within 4:6 hrs. • Common bacteria in strangulated hernia: <i>E.coli</i> <i>Anaerobic streptococci</i> <i>Anaerobic bacteria</i> Klebsiella
C/p	A. General: The pt looks toxic & Dehydrated with low grade fever B. Local signs of hernia (4 cardinal signs): 1. Irreducible 2. No impulse on cough 3. Tense 4. Severely Tender C. Cp of Intestinal obstruction (+/-): Abdominal <i>distension</i> , <i>Vomiting</i> , <i>Colicky pain</i> , <i>Absolute constipation</i> .

Ix	<p>*Routine Ix plus:. 1. Plain X-ray abdomen in erect posture → multiple air-fluid levels 2. Serum electrolytes. 3. Blood urea and serum creatinine. 4. Total count is increased.</p>			
Treatment	<p>It is a Surgical Emergency</p> <p>1. Proper preoperative preparation of the Pt (Resuscitation) - NPO & Ryle's tube - IV fluids to correct dehydration and electrolyte imbalance - Antibiotics. - Catheterization to maintain adequate urine output</p> <p>2. Urgent Surgical repair: - <i>Inguinal</i> incision or <i>inguinoscrotal</i> incision - <i>Deliver</i> the sac - <i>Open</i> the sac at its fundus - <i>Drain</i> the toxic fluid</p> <p>- <i>Hold</i> the content & Release the constricting agent - <i>Deal</i> with content: Viable & Nonviable & Doubtful - Bassini's repair (Hernioplasty not preferred) - Closure & put a drain</p>			
		Viable	Non-Viable	Doubtful
	Color	<i>Pinkish</i>	<i>Brown</i> or <i>black</i>	- Warm saline packs - Apply pure O2 to the pt - neostigmine to increase peristalsis - Then wait 10 minutes: 1. If the content becomes ref & regains peristalsis: viable 2. if not: gangrenous
	Peristalsis	Present ☑	Absent ✕	
	Arterial pulsation	Present ☑	Absent ✕	
	Peritoneal luster	Present ☑	Absent ✕	
	Action	Reduction	*SI: R&A *omentum: excise *LI: See below	



	<p>* If the content is Large intestine:</p> <ul style="list-style-type: none"> - Rt colon: R&A - Lt Colon: <i>Resection & Proximal colostomy</i> or <i>on table lavage & primary anastomosis.</i> <p>Notes</p> <p>During surgery for strangulated hernia mesh is usually not used, only repair is done.</p>
Notes:	<ul style="list-style-type: none"> • Strangulation without obstruction? (IMP) <ol style="list-style-type: none"> 1. Omentocele 2. Richter's hernia 3. Littre's hernia • Richter's hernia: when Part of circumference of the bowel is strangulated, the patient presents with diarrhea, gastroenteritis. <i>Richter's hernia is more common</i> with femoral, obturator hernias. • Maydle's Hernia [Hernia-en-W or Retrograde strangulation]: <ul style="list-style-type: none"> - Here a loop of bowel in the form of 'W' lies in the hernial sac and the centre portion of the 'W' loop is strangulated and lies within the abdominal cavity. - local tenderness over the hernia is not marked and hernia gets reduced with the strangulated loop in the center of the "W". - Strangulation in this case is often missed during surgery and may lead to peritonitis due to <i>retained gangrenous loop</i>. • Direction of Release of the constricting agent: <ol style="list-style-type: none"> 1. Inguinal hernia: <ol style="list-style-type: none"> a. DIR: Laterally b. SIR: any direction 2. Femoral hernia: we cut lacunar ligament medially (Why?) 3. Umbilical hernia: Vertical release in linea alba.
4. Inflammation	
Etiology	<ol style="list-style-type: none"> 1. Inflammation of the <i>content</i>: Appendix & Ovary 2. Inflammation of the <i>Sac</i> 3. Inflammation of the <i>overlying skin</i>: Truss mal-use <p>N.B</p> <p>Some authors consider inflammation is that of the content only.</p>
CP	<p>The hernia becomes:</p> <ol style="list-style-type: none"> 1. <i>irreducible</i> 2. <i>Tender</i> 3. <i>not tense</i> 4. <i>There is impulse on cough</i>

5. Hydrocele of hernial sac											
Etiology	<ul style="list-style-type: none"> - This is due to <i>reduction</i> of the contents of the sac - The omentum <i>obstructs</i> the opening of the sac - Only fluids to <i>pass</i> to the sac. 										
CP	* <i>Cystic translucent</i> inguinoscrotal swelling										
Tt	Excision										
2. Direct inguinal hernia [DIH]											
Incidence	<ul style="list-style-type: none"> • 10-15% of the hernias are direct & 50% of direct hernias occur <i>bilateral</i>. • 35% of inguinal hernias are direct. • It is <i>uncommon in females and children</i>. 										
Etiology	<ul style="list-style-type: none"> • It is always acquired, due to weakness of <i>posterior wall of inguinal canal</i> (Fascia transversalis). • It occurs through Hesselbach's triangle which is bounded by: MCQ <ul style="list-style-type: none"> o Laterally → <i>Inferior epigastric artery</i>. o Medially → <i>Lateral border of rectus abdominis</i> (Linea semilunaris) o Inferiorly → <i>Inguinal ligament</i> 										
Pathology	<ol style="list-style-type: none"> 1. Defect: <i>Weakness of Fascia transversalis</i> 2. Sac: Present behind the spermatic cord → <i>medial</i> to the inferior epigastric artery & has a <i>wide neck</i> (So, less liable for complications) 3. Content: Small intestine & omentum or both 4. Coverings: [From inside out] <ul style="list-style-type: none"> o Extraperitoneal fat o Fascia transversalis o Stretched conjoint tendon o External oblique aponeurosis o Camper's & Scarpa's fascia o Skin <ul style="list-style-type: none"> • Hesselbach's triangle is divided into <i>medial</i> and <i>lateral halves</i> by Medial umbilical ligament (obliterated umbilical artery). ☑ So direct hernia is classified as <i>medial</i> or <i>lateral</i> types. 										
Types	<table> <tr> <th>1. <u>Lateral</u> type</th><th>2. <u>Medial</u> type</th></tr> <tr> <td>bulges through <i>lateral</i> part of Hesselbach's triangle [Fascia transversalis <i>only</i>]</td><td>bulges through <u>Medial</u> part of Hesselbach's triangle [Fascia transversalis & Conjoint tendon]</td></tr> <tr> <td>Has a wide neck → less liable for complications.</td><td>Has a <u>narrow</u> neck → more liable for complications.</td></tr> <tr> <td><u>Never</u> Descend into the scrotum.</td><td><u>May</u> Descend into the scrotum!</td></tr> <tr> <td colspan="2"> N.B <ul style="list-style-type: none"> • The newer classification of DIH is: [Only for your knowledge] 1. Lateral type is called DIH 2. Medial type is called Supra-vesical hernia </td></tr> </table>	1. <u>Lateral</u> type	2. <u>Medial</u> type	bulges through <i>lateral</i> part of Hesselbach's triangle [Fascia transversalis <i>only</i>]	bulges through <u>Medial</u> part of Hesselbach's triangle [Fascia transversalis & Conjoint tendon]	Has a wide neck → less liable for complications.	Has a <u>narrow</u> neck → more liable for complications.	<u>Never</u> Descend into the scrotum.	<u>May</u> Descend into the scrotum!	N.B <ul style="list-style-type: none"> • The newer classification of DIH is: [Only for your knowledge] 1. Lateral type is called DIH 2. Medial type is called Supra-vesical hernia 	
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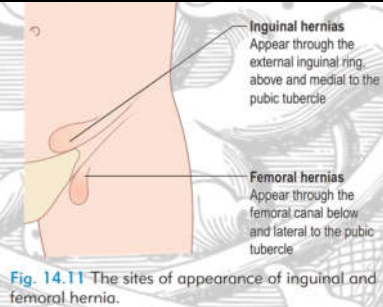
C/P	<ul style="list-style-type: none"> • Groin swelling: <ol style="list-style-type: none"> 1. <i>Reducible</i> 2. Shows <i>Expansile impulse</i> on cough 3. <u>Above</u> and <u>lateral</u> to pubic tubercle
Notes	<ul style="list-style-type: none"> • Malgaigne bulgings: <ul style="list-style-type: none"> - They are protrusion of abdominal wall muscle during leg raising test and appear as weak, soft, supple, swellings - They signify <i>poor</i> abdominal muscle <i>tone</i> → hernioplasty is indicated. • Direct hernia <i>rarely</i> descends into the scrotum and strangulation is not as common as in indirect hernia.
Ix	Same as IIH
Treatment	<p>1. Treatment of ppt factors is a must to avoid recurrence e.g</p> <ul style="list-style-type: none"> - TURP in BPH - Treat chronic constipation & chronic cough - Stop smoking <p>2. Surgical as IIH, <i>but</i> the direct sac usually is not opened.</p> <p>- Hernioplasty:</p> <ol style="list-style-type: none"> 1. Open approach: [<i>Lichtenstein Onlay tension free mesh repair</i>] or 2. Laparoscopic approach TEP & TAPP indicated in : <ul style="list-style-type: none"> b. Recurrent hernia a. Bilateral hernia
Funicular Direct Hernia [<i>Pre-vesical</i> Hernia & <i>Ogilvie's</i> hernia]	
Definition	It is a type of direct hernia which is prone for strangulation .
Etiology	<ul style="list-style-type: none"> o It herniates through a small defect in the medial part of the conjoined tendon just <i>above</i> the pubic tubercle. o It is a <i>narrow-necked</i> hernia with <i>pre-vesical</i> fat and a portion of UB. o It occurs in elderly males.
Pantaloon hernia [<i>SADDLE</i> hernia, <i>ROMBERG</i> hernia]	
Definition	The presence of <i>both</i> <u>direct</u> and <u>indirect</u> inguinal sacs straddling the inferior epigastric artery.
C/P	It clinically present as Direct hernia.
Surgical importance	<ul style="list-style-type: none"> - During surgery, <i>indirect</i> sac may be missed and so leads to recurrent hernia through retained (or unidentified) <i>indirect</i> sac. - It is one of the causes for recurrent hernia .

We open the sac only if it is complicated to deal with the content

	DIH	IIH
Incidence		
Occurrence	Less common	More common
Age	Old	Any age (young & middle age)
Side	More likely to be bilateral	Usually unilateral
Etiology		
	Usually acquired weakness	Mainly congenital Defect
Pathology		
Parietal defect	Weak fascia transversalis	Wide DIR
Sac	is <u>posterior</u> to the cord	lies <u>within</u> the cord, <u>antero-lateral</u> to the cord Strs.
Neck of the sac	is <u>wide</u> and <u>medial</u> to inferior epigastric artery	is <u>narrow</u> and <u>lateral</u> to inferior epigastric artery
Covering	EOA	Cord layers + EOA
Clinical Picture		
Shape	Hemispherical	Oblong
Descent into scrotum	very rare	Common (Scrotal type)
Descent	Forwards	Downward, Forward and medially
Reduction	Backwards	Upward, backward and laterally
DIR size	Normal	Wide
SIR test	Impulse is felt over the <u>pulp</u> of the little finger	Impulse is felt on the <u>tip</u> of the little finger
DIR test	Test shows impulse Even after occluding the deep ring	Ring occlusion test does <u>not</u> show any impulse after occluding the deep ring
Complications		
	Less common, dt <u>wide</u> neck	More common, dt <u>narrow</u> neck
Surgery		
	Herniotomy usually <u>unnecessary</u> unless <u>obstruction</u> is present	Herniotomy usually necessary

3. Femoral hernia		
Incidence	<p>-Common in <i>females</i> (2:1 ratio), common in <i>multipara</i> & Rare before puberty. - 20% occurs bilateral however, <i>more common</i> on <i>right</i> side.</p> <p>- <i>More Common in females?</i> V.I.Q</p> <ol style="list-style-type: none"> 1. Wide pelvis → Wide femoral ring 2. Pelvic tilt <i>downwards</i> in female → allows easier descent 3. <i>Attenuated</i> ileo-psoas muscle in females → <i>Wider</i> Ring & Canal 4. <i>Increased IAP</i> due to repeated pregnancy. 	
Etiology	<p><u>Protrusion</u> of the viscus or part of the viscus within the peritoneal sac <u>through</u> [the <i>femoral ring</i>] into [the <i>femoral canal</i>].</p> <p>N.B Boundaries of Femoral ring: MCQ</p> <p>Medially: Lacunar ligament (Gimbernat's ligament) Laterally: Femoral vein Posteriorly: Pectineal ligament (Cooper's Ligament) Anteriorly: Inguinal ligament (Poupart's ligament)</p>	
Pathology	<p>1.Defect:</p> <p>2. Sac:</p> <p>3. Content:</p> <p>4.Covering:</p>	<p>Through the <i>Femoral ring</i> the sac</p> <p>passes downward in the <i>femoral canal</i> then forward through saphenous opening then upwards & laterally.</p> <p>N.B It Doesn't continue inferiorly because of the attachment of fascia lata (deep fascia of the thigh) with the Scarpa's fascia just below the saphenous <i>opening</i>.</p> <p>Usually omentum or small bowel</p> <p>-Extraperitoneal fat -Fascia transversalis (ant. Wall of <i>femoral sheath</i>) -Fascia lata -Superficial fascia -Skin</p>
Types	<ol style="list-style-type: none"> 1. Narath's hernia: Occurs behind <i>femoral artery</i>, in <i>congenital dislocation of hip</i> 2. Laugier's hernia: Occurs through a defect in <i>lacunar</i> ligament 3. Cloquet's hernia: If sac lies under the <i>pectineal fascia</i>. 4. Sliding femoral hernia: a portion of <i>bladder</i> forms the wall of the <i>femoral</i> hernial sac. 	

CP	<ul style="list-style-type: none"> Groin swelling: <ol style="list-style-type: none"> Below and lateral to pubic tubercle MCQ Shows <i>expansile impulse</i> on cough <i>Reducible</i> (Usually irreducible) <p>Or</p> <ul style="list-style-type: none"> CP of Obstruction & Strangulation: 40% of femoral hernias present as <i>emergency</i> hernia with obstruction/strangulation. Often femoral hernia can be associated with <i>inguinal</i> hernia also.
Imp. Note	<ul style="list-style-type: none"> Femoral hernia is the commonest hernia to strangulate dt: imp <ol style="list-style-type: none"> <i>Sharp edge</i> of lacunar ligament Usually <i>irreducible</i> <i>Narrow</i> neck <i>long Tortuous course</i>: Downward & forward & upward and laterally
DDx	<ol style="list-style-type: none"> An enlarged <i>Cloquet lymph node</i> of any cause <i>Inguinal</i> hernia <i>Femoral aneurysm</i> <i>Saphena varix</i> → It is soft, disappears on lying down, fluid thrill, impulse on coughing and venous hum on auscultation are present. There is associated varicose veins on leg <i>Psoas abscess</i> — psoas spasm with flexed hip but difficulty in extension <i>Lipoma</i> Distended <i>psoas bursa</i> (Disappears on hip flexion) <i>Haematoma</i> in the region
N.B	<ul style="list-style-type: none"> Gaur's sign: In femoral hernia, distension of superficial epigastric and/or circumflex iliac veins occurs due to the <i>pressure</i> by the hernial sac.
Treatment	<p>There are Different types of approaches in FH repair</p> <ol style="list-style-type: none"> Lockwood-low operation [<i>Femoral</i> approach]: <ul style="list-style-type: none"> The sac is approached below the inguinal ligament through: <ul style="list-style-type: none"> Groin crease incision <u>or</u> Over the swelling So, that fundus of sac is dissected by direct vision and repair is done from below. Repair: By suturing <i>Poupart's</i> (inguinal ligament) To <i>Pectineal</i> ligament [P-to-P repair]



	<p>2. Lotheissen's operation [Inguinal approach]:</p> <ul style="list-style-type: none"> - It is through inguinal canal approach (<i>like for inguinal hernia</i>) - <i>Transversalis</i> fascia is opened and neck of the sac is identified in the femoral ring. Sac is dissected from above; neck is ligated and repair is done. - Repair: After herniotomy, <ul style="list-style-type: none"> a. <i>Conjoined</i> tendon is sutured to <i>Cooper's</i> ligament [<i>Pectineal</i>] [C-to-C repair] <p>Or</p> <ul style="list-style-type: none"> b. a mesh plug is put in femoral <i>Ring</i>: <i>Polypropylene mesh</i> can be buttressed over the femoral canal to close the defect. <p>3. Mc'Evedy-high operation:</p> <ul style="list-style-type: none"> - A incision is made over the femoral canal extending vertically above the inguinal ligament. - Sac is dissected from below, neck from above and repair is done from above. - It gives a very good exposure of both neck, fundus of sac and repair is also easier. - It is done in <i>strangulated femoral hernia</i>. <p>4. Laparoscopic mesh repair → TEP/TAPP</p> <p>N.B</p> <p><i>Mc'Evedy</i> is an approach but <i>Mc Vay</i> is a repair technique (<i>Herniorraphy</i>) see before.</p>
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B. *Ventral* hernias

1. *Epigastric* hernia

Definition	Hernia that occurs <i>through linea alba</i> anywhere from xiphoid process to the umbilicus.
Incidence	<ul style="list-style-type: none"> - Most common btw the ages of 20 : 50 years - <i>Male</i> : female → 3:1 - 20% are multiple
Etiology	<p>There are 2 theories regarding the etiology of <i>Epigastric</i> hernia:</p> <ol style="list-style-type: none"> 1. Acquired: hernia develops through one of the <i>foramens of exit</i> of small Para-midline nerve & vessels. 2. Congenital: <i>defect</i> in the decussation of the fibers of <i>linea alba</i> → Single aponeurotic decussation. <ul style="list-style-type: none"> - Content is Usually omentum & Rarely SI.
CP	<ol style="list-style-type: none"> 1. <i>Asymptomatic:</i> Being discovered accidentally during routine abdominal examination 2. <i>Painful hernia:</i> Local pain which increases by physical exertion → due to partial strangulation of fat. 3. <i>Dyspeptic pain:</i> Due to traction of greater omentum → pull on the stomach.
Treatment	<ol style="list-style-type: none"> 1. Small defect → <i>Primary closure</i> by nonabsorbable suture 2. large defect → <i>Mesh</i> repair.

2. Fatty hernia linea alba (FHLA)			
Etiology	<ul style="list-style-type: none">It occurs usually through a <i>defect in the decussation</i> of the fibers of linea alba, anywhere between xiphoid process and umbilicus,Extraperitoneal fat protrudes through the defect as fatty hernia of the linea albaIt is sacless hernia.Later protrusion enlarges and drags a pouch of peritoneum, presenting as a <i>True epigastric hernia</i>.		
CP	Presenting as a swelling in the upper midline and <i>may be mistaken as a lipoma</i> .		
Treatment	1. <i>Removal</i> of the fat. 2. <i>Closure</i> of the small defect by nonabsorbable material.		
		Epigastric hernia	FHLA
	Peritoneal Sac	Present☑	Absent✗
	Impulse on cough	Present☑	Absent✗
	Contents	Omentum or intestine	✗No sac No content✗
3. Para-umbilical hernia			
Definition	It's a hernia that occurs through a defect in linea alba just <u>above</u> or <u>below</u> the umbilicus . - 90% <u>above</u> umbilicus & 10% <u>below</u> ? (IMP) 1. linea alba <u>above</u> umbilicus is wider. 2. linea alba <u>below</u> the umbilicus is supported by 3 ligaments : - One median umbilical ligament: obliterated <u>urachus</u> - 2 medial umbilical ligaments: obliterated umbilical <u>arteries</u> - Within 2 inches from umbilicus - Distorts the <i>shape</i> of Umbilicus Crescent shape IMP		
Pathology	1. Defect: 2. Content: 3. Coverings:	linea alba just above or below the umbilicus - Commonly the Omentum - Less commonly the SI or transverse colon - Extraperitoneal fat - Stretched fibers of linea alba - Superficial fascia - Skin	
N.B:	- It has got tendency to go for adhesions, irreducibility and obstruction. - The most common complication of PUH is Irreducibility [why?] - Due adhesions of omentum & multilocularity of the sac.		
Predisposing factors	1. Multiple pregnancies 2. Ascites & organomegaly for a long period 3. Obesity - Common in <i>females</i> (5:1 ratio).		
C/P	<ul style="list-style-type: none">It presents as a swelling which has: 1. <i>Smooth</i> surface, distinct edges, <i>soft, resonant</i> with dragging pain 2. Distorting the shape of the umbilicus and has impulse on cough.Large hernias can present with intestinal colic due to subacute intestinal obstructionEventually strangulation can occur.		

Treatment	<p>1. Treatment of the <i>ppt</i> factors → weight reduction.</p> <p>2. Huge PUH → Preoperative pneumoperitoneum to increase the size of peritoneal cavity' to avoid abdominal compartment syndrome</p> <p>3. Surgery:</p> <p>A. Hernioplasty:</p> <ul style="list-style-type: none"> - Dissection of hernial sac and placement of mesh in <i>Retro-rectus plane</i>. - Often umbilectomy is required and also <i>mesh placement</i> is beneficial (when defect is >4 cm in size). - If there is strangulation, resection of bowel segment and anastomosis is done followed by repair of the hernia. <p>B. Herniorrhaphy: Not done nowadays</p> <p>1. Mayo's operation:</p> <ul style="list-style-type: none"> - Through a transverse elliptical incision, sac is identified and dissected. Herniotomy is done. - <i>Double-breasting</i> of the defect in the rectus is done by interrupted <i>nonabsorbable</i> sutures. <p>• Indicated in: Single + small defect & No divarication of the Recti[strong abd muscles]</p> <p>2. Keel repair:</p> <ul style="list-style-type: none"> - a series of nonabsorbable sutures is applied from xiphisternum to umbilicus with invagination of medial flaps inside the abdomen, So they project inside <i>like a keel of a ship</i>. <p>• Indicated in: Multiple + Large defect & With divarication of the Recti</p> <p style="text-align: center;">[[Both of them not done nowadays]]</p> <p>N.B The commonest complication of PUH is Irreducibility as the sac of PUH is <i>multiloculated</i> & adhesions of the omentum</p>
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4.Umbilical hernia

Definition	It's a herniation through a weak umbilical scar [cicatrix] .
Incidence	<ul style="list-style-type: none"> • Male : female → 2:1. • It is seen in 20% of newborn infants. • Umbilical hernia is common in <i>Down's syndrome</i>.

Types	<p>- Umbilical hernia can be:</p> <ol style="list-style-type: none"> 1. Congenital: Exomphalos Minor & Major. 2. Infantile umbilical hernia (common in males). 3. Acquired in adults (common in females). <p>• Congenital umbilical hernia is common in Africa or in African origin people (8 times).</p>
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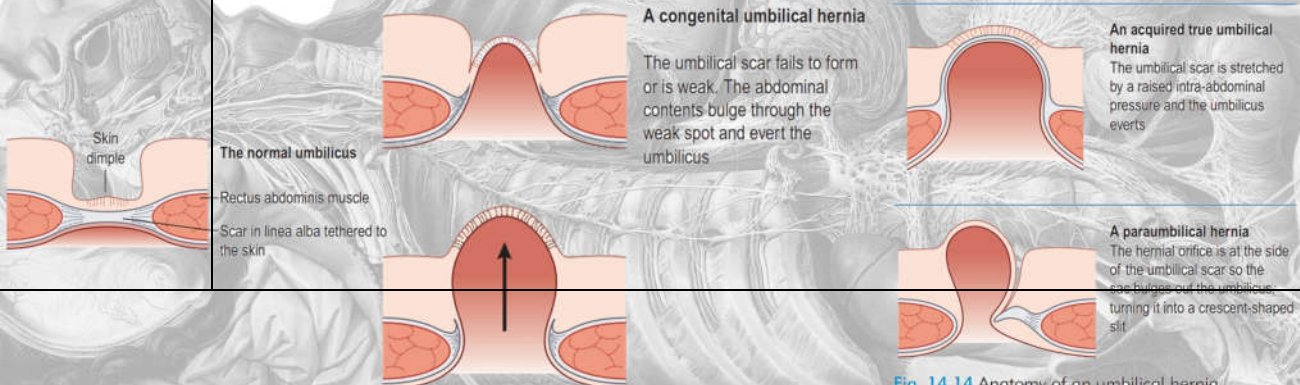


Fig. 14.14 Anatomy of an umbilical hernia.

Etiology	1. <i>Absence</i> of umbilical fascia 2. <i>Incomplete</i> closure of umbilical defect.			
CP	<p>• Swelling in the umbilical region:</p> <ol style="list-style-type: none"> 1. Reducible 2. Expansile impulse on cough 3. Hemispherical in shape → Does not distort the shape of the umbilicus but <i>everts</i> it. <p>- The overlying skin may be affected by intertrigo → should be treated first as it may cause postoperative wound infection & recurrent hernia.</p>			
Treatment	<p>1. In congenital UH:</p> <p>In 95% of cases, it disappears <i>spontaneously</i> in few months after birth. So, Just reassure the parents.</p> <p>• Indications for Surgery:</p> <ol style="list-style-type: none"> 1. If persists even after the age of two years. (4yrs in pediatric surgery books) 2. If the defect is more than 2 cm in size. 3. If it complicated (although complications are very rare) <p>2. Adult UH:</p> <p>1. Primary closure of the defect:</p> <ul style="list-style-type: none"> - An <i>infra</i>-umbilical incision is made encircling its lower half, - Sac is dissected circumferentially and is released off from the umbilicus and subcutaneous tissue. - Sac is opened; contents are reduced; excess part is excised up to the umbilical ring. - Defect is closed with interrupted nonabsorbable polypropylene sutures. <p>2. Sublay mesh repair:</p> <ul style="list-style-type: none"> - In a large umbilical hernia (>3 cm size defect). - Presently it is standard to use polypropylene mesh as sublay or in retro-rectus position and then rectus sheath is closed. <p>3. Laparoscopic umbilical hernia repair:</p> <ul style="list-style-type: none"> - It is useful only in <i>large umbilical hernia</i>. <p>4. Umbilectomy:</p> <ul style="list-style-type: none"> - if there is Unhealthy thin skin over the large umbilical hernia. - It is better to do umbilectomy in these patients (excision of umbilical cicatrix). - It is done only in adult with large umbilical hernia with thinning of umbilical skin. <p>• Prior consent and eventual creation of umbilicus is needed.</p>			
N.B		Epigastric hernia	PUH	Umbilical hernia
	Shape of the Umbilicus	Normal (Separated from the umbilicus by normal interval)	Distorted (Crescent in shape)	Normal shape but <i>everted</i>

5. Incisional hernia	
Definition	It's a herniation through a <i>scar of a previous surgery other than hernial repair</i> [otherwise it is called Recurrent hernia] Incisional hernia is not the same as a Recurrent Hernia.
Incidence	<ul style="list-style-type: none"> - It occurs in 10% of abdominal surgeries: - 70% occurs in first 5 years; 30% occurs in 5-10 years, - It is common in old age and obese individuals, - It is more common in: <ul style="list-style-type: none"> 1. Vertical more than horizontal incisions 2. Upper abdominal more than lower abdominal incisions 3. Midline more than paramedian incision
Etiology	<p>Pre-operative:</p> <ol style="list-style-type: none"> 1. Untreated Causes which <i>increases the intra-abdominal pressure</i>: <ul style="list-style-type: none"> a. Chronic cough b. Chronic constipation c. BPH 2. General debility: DM & Uremia & obstructive jaundice 3. nature of the 1^{ry} disease: peritonitis & neglected IO & abdominal malignancy 4. Poor nutritional status of the patient 5. Smoking 6. Obesity <p>Operative:</p> <ol style="list-style-type: none"> 1. Extensive trauma to tissue 2. Bad hemostasis 3. Vertical incisions may injure the nerves of the abdominal muscles 4. Muscle cutting rather than muscle splitting incisions 5. Too <i>tight</i> or too <i>loose</i> sutures 6. Faulty technique of closure 7. Insertion of a drain through the same wound incision <p>Post-operative:</p> <ol style="list-style-type: none"> 1. Wound infection (SSI): MCC 2. Early return to work & lifting heavy objects in early postop. period. 3. Persistent precipitating factors: chronic cough & constipation 4. Postoperative distention: Ileus
Types	<ol style="list-style-type: none"> 1. Defective type 2. Paralytic type

C/P	<ul style="list-style-type: none"> • Detailed history of the <i>previous operation</i>: <ul style="list-style-type: none"> - Place & Date & Type and the surgeon who performed the operation. • Post-operative: <ol style="list-style-type: none"> 1. Dressing → pus & bad odor 2. Time of stitches removal 3. Wound infection 4. Straining → chest infection → cough. • CP: <ul style="list-style-type: none"> - Swelling in a Scar region of previous laparotomy with: <ol style="list-style-type: none"> 1. Impulse on coughing. 2. Gurgling sound 3. Often bowel peristalsis may be visible under the skin. - Eventually features of irreducibility, obstruction, strangulation is seen. - Scar: - Its extent and location <ul style="list-style-type: none"> - whether healed primarily or secondarily - It may be small or large; huge or massive. <p>Note</p> <ul style="list-style-type: none"> • Size of the defect & Muscle power arc important to decide the type of surgical closure in incisional hernia.
Ix	<ol style="list-style-type: none"> 1. Routine 2. Ix. For <i>ppt factors</i>: <ul style="list-style-type: none"> - Chest X-ray – * Chronic cough - Abdominopelvic US – > for ascites & organomegaly.
treatment	<p>Pre-operative preparation:</p> <ol style="list-style-type: none"> 1. Reduction of weight and control of obesity 2. Nutrition, control of anemia 3. treatment tor diabetes, hypertension, cardiac diseases, respiratory problems 4. Treating the precipitating causes 5. Pre-operative pneumo-peritoneum in Massive incisional hernia why? <ul style="list-style-type: none"> *As in Massive incisional hernia after reduction of the content → Abdominal compartment Syndrome: <ol style="list-style-type: none"> a. compression b. Paralytic ileus due to splanchnic congestion c. Splinting of the diaphragmatic with respiratory embarrassment <p>Prevention:</p> <p>Prior increase of the capacity of peritoneal cavity by creating <i>Pneumoperitoneum</i> using CO₂ so as to increase the peritoneal pressure by 12-15 cm of H₂O, daily for 3-6 weeks.</p> <p>later definitive surgery is done.</p>

Surgery:

The new incision is made by removal of the old Scar

1. Mesh repair:

- Mesh repair of the incisional hernia defect is always better and ideal with less chances of recurrence

Types:

1. Sublay:

- Outer to peritoneum is ideal method.
- Large sized mesh is placed in pre-peritoneum.
- It need not be fixed as abdominal pressure keeps it in position

2. Underlay:

- Under the peritoneum, directly over the content.
- there are chances of adhesions/fistula formation.

3. Overlay mesh:

- Placed outer to musculoaponeurotic layer.
- Here mesh is placed under subcutaneous tissue: it carries high recurrence rate (30%), So it is not recommended.

4. Combined inlay and overlay with two layers of mesh.

2. Rive's Stoppa's method:

- Placing mesh between posterior rectus sheath and rectus muscle widely.

3. Components separation technique:

- Is better method in large defects,
- Advantage is defect up to **20 cm** can be easily brought together,
- Technique is also called as *Autologous repair by vascularized innervated muscle flaps*.

4. Herniorrhaphy (not done nowadays): ✗

- a. Cattell's operation — * Layer by layer closure
- b. Mayo repair — * Double breasting of the rectus sheath
- c. Keel operation
- d. Nuttall's operation

Post-operative Care

1. Antibiotics & Analgesics.
2. Nasogastric aspiration & Prevention of paralytic ileus.
3. Control of obesity and other precipitating factors.
4. Stop smoking and treat other associated causes.
5. Drain should be kept until drainage becomes minimal.
6. Abdominal binder is used to support abdominal wall during, recovery period.

•Complications of incisional hernia surgery are:

1. Wound infection, seroma formation
2. Paralytic ileus, abdominal compartment syndrome in large Hernias
3. Wound sinus, enterocutaneous fistula
4. Infection of the mesh, recurrence

N.B

It is now universally accepted that prosthetic repair is gold standard for all incisional hernia.

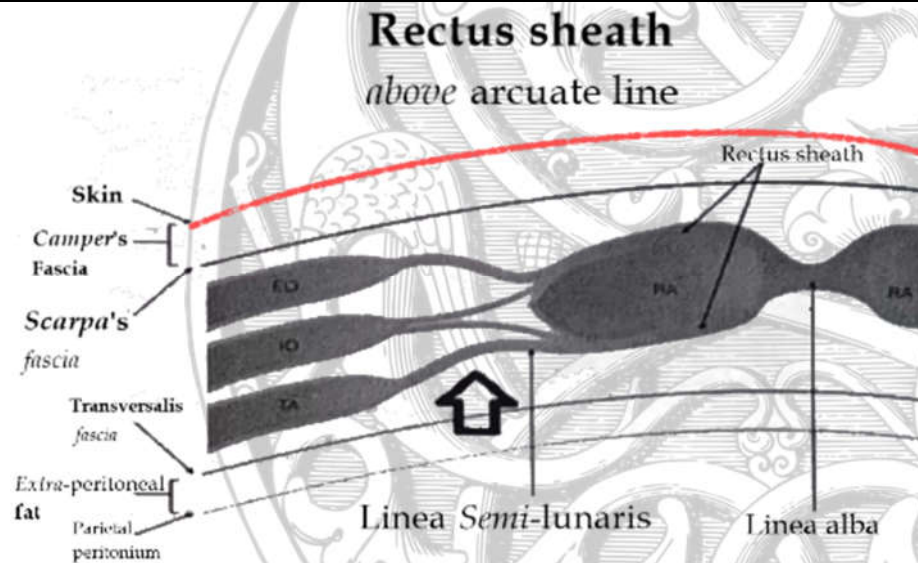
Recurrent Hernia	
Incidence	<ul style="list-style-type: none"> • General rate of recurrence is 10% - The commonest hernia to recur is Recurrent hernia, - If recurrence is within 3 years it is called as <u>early</u>; if after 3 years it is <u>late</u> • Recurrence Rate: <ol style="list-style-type: none"> 1. <i>Bassini's</i> repair → 10% 2. Shouldice repair → 1% 3. <i>hernioplasty</i> → 1 to 3% 4. Other methods → 1 to 5%
Etiology	<p>The same causes as Incisional hernia <u>but</u> in <i>operative causes</i> add:</p> <ol style="list-style-type: none"> 1. Tension in repair 2. <i>Missed</i> sac → <i>Pantaloon</i> hernia
C/P	<ul style="list-style-type: none"> • Same as for any hernia: - Swelling in the scar of the previous hernial repair with <i>expansile</i> cough. - The defect is usually narrow and so more likely to go in for <i>strangulation</i>.
Treatment	<ol style="list-style-type: none"> 1. Treatment of the ppt factors is mandatory. 2. Laparoscopic approach (TEP/TAPP) is <i>better</i> for recurrent hernia. <p>Or</p> <ol style="list-style-type: none"> 3. Open repair → Pre-peritoneal mesh repair is ideal. <p>N.B</p> <ul style="list-style-type: none"> - In recurrent hernia, repair should be done using a <i>different</i> approach; as the anatomy of the site primary surgery is distorted & the rate of complications & recurrence will be high. So, Laparoscopic approach (TEP/TAPP) is better for recurrent hernia.
Sliding hernia	
Definition	<p>Part of the <i>posterior wall</i> of the sac is formed by a retroperitoneal organ.</p> <ul style="list-style-type: none"> - It commonly occurs in <u>an indirect sac</u> even though femoral and direct sliding hernias are known to occur.
Sliding organs	<ul style="list-style-type: none"> • Posterior wall of the sac is not only formed by the <i>parietal</i> peritoneum. but also, by: <ol style="list-style-type: none"> 1. Sigmoid colon with its mesentery → on the <i>left</i> side 2. Caecum → on the <i>right</i> side. 3. Urinary bladder → Both sides.
C/P	<ul style="list-style-type: none"> • When to suspect: <ol style="list-style-type: none"> 1. By History: <ul style="list-style-type: none"> - History of <i>long-standing</i> hernia - If the sliding organ is UB: <ol style="list-style-type: none"> a. Double micturition b. The patient feels a desire to micturate when pressing on the hernia and the swelling decreases in size after micturition. 2. By swelling Examination <ul style="list-style-type: none"> - The hernia is partially irreducible: residual swelling after reduction of hernia. - Pressure on the hernia causes desire of micturition <p>[[The Sure Diagnosis of Sliding hernia is intraoperative]]</p>

Importance	It must be Diagnosed prior to herniotomy <i>in order not to injure</i> the sliding organ.
Treatment	<ul style="list-style-type: none"> Posterior wall of the sac <i>should not be separated</i> from large bowel or bladder. <p>If tried → <i>injury</i> may result to these organs leading to <i>fecal</i> or <i>urinary fistulas</i>.</p> <ul style="list-style-type: none"> Inside out purse string suture on the opened sac is applied and the sac with its posterior wall is pushed into the abdominal cavity. Urinary <i>catheterization</i> is a must <i>before</i> surgery. <p>Notes</p> <ol style="list-style-type: none"> Right sided sliding hernia will have <i>caecum</i> and <i>appendix</i> in its posterior wall: <ol style="list-style-type: none"> Caecum should <i>not</i> be separated from posterior wall of the sac which may otherwise create <i>fecal fistula</i>. Appendix should not be removed as it may precipitate sepsis. Appendices epiploicae from <i>sigmoid</i> colon should <i>not</i> be removed as there are chances that they <i>may contain</i> <i>small colonic diverticula</i> which may get opened to contaminate the field. Bladder will be present on <i>medial</i> side of the sac and sac should <i>not</i> be separated; if bladder injury occurs it should be sutured in <i>two layers with vicryl</i>.

Rare Types of hernia

1. Spigelian hernia

Definition	It is a type of <i>interparietal</i> hernia occurring at the level of the <i>arcuate line</i> through <i>spigelian Fascia</i> .
Anatomy	<p>◇ It is lateral ventral hernia through <i>Spigelian fascia</i> at any point along its line.</p> <p>◇ Semilunar line of Spigel (Linea semilunaris):</p> <ul style="list-style-type: none"> - is a line from pubic tubercle to tip of 9th costal cartilage. - It marks the <i>lateral</i> margin of the rectus sheath. <p>◇ Arcuate line (fold) of Douglas:</p> <ul style="list-style-type: none"> - It is the lower end of posterior lamina of rectus sheath below the umbilicus and above the pubis. <p>◇ Spigelian fascia:</p> <ul style="list-style-type: none"> - is area between <i>lateral</i> border of the rectus muscle and external and internal oblique and transverses abdominis muscle.



- ◇ Spigelian hernia can occur above (10%) or below (90%) the umbilicus,
- ◇ Below the umbilicus it occurs at the junction of *linea semilunaris* and *arcuate line* → wider and weaker point & point of entry of IEA into rectus sheath. (Imp Q.)

C/P

- ◇ Common in *females* after 50 years of age.
- ◇ Presents as a soft, **reducible** mass *lateral* to the rectus muscle and *below* the umbilicus, with **impulse** on coughing.
- ◇ **Strangulation** is **common** in spigelian hernia due to **rigid fascia**.
- ◇ Spigelian hernia May be:
 1. Palpable → if it is lying between EOM & IOM
 2. **Impalpable** → if it is lying between TAM & IOM
- ◇ **Differential Diagnosis**
 1. Abdominal wall **lipoma**.
 2. Soft tissue **sarcoma**.
 3. Abdominal wall **haematoma**.

Ix

Ultrasound abdomen.

Treatment

Through a **lengthy transverse incision** **herniotomy** and later:

1. **Small** defect → Closure of the defect layer by layer using non-absorbable interrupted sutures.
2. **large** defect → Mesh repair.

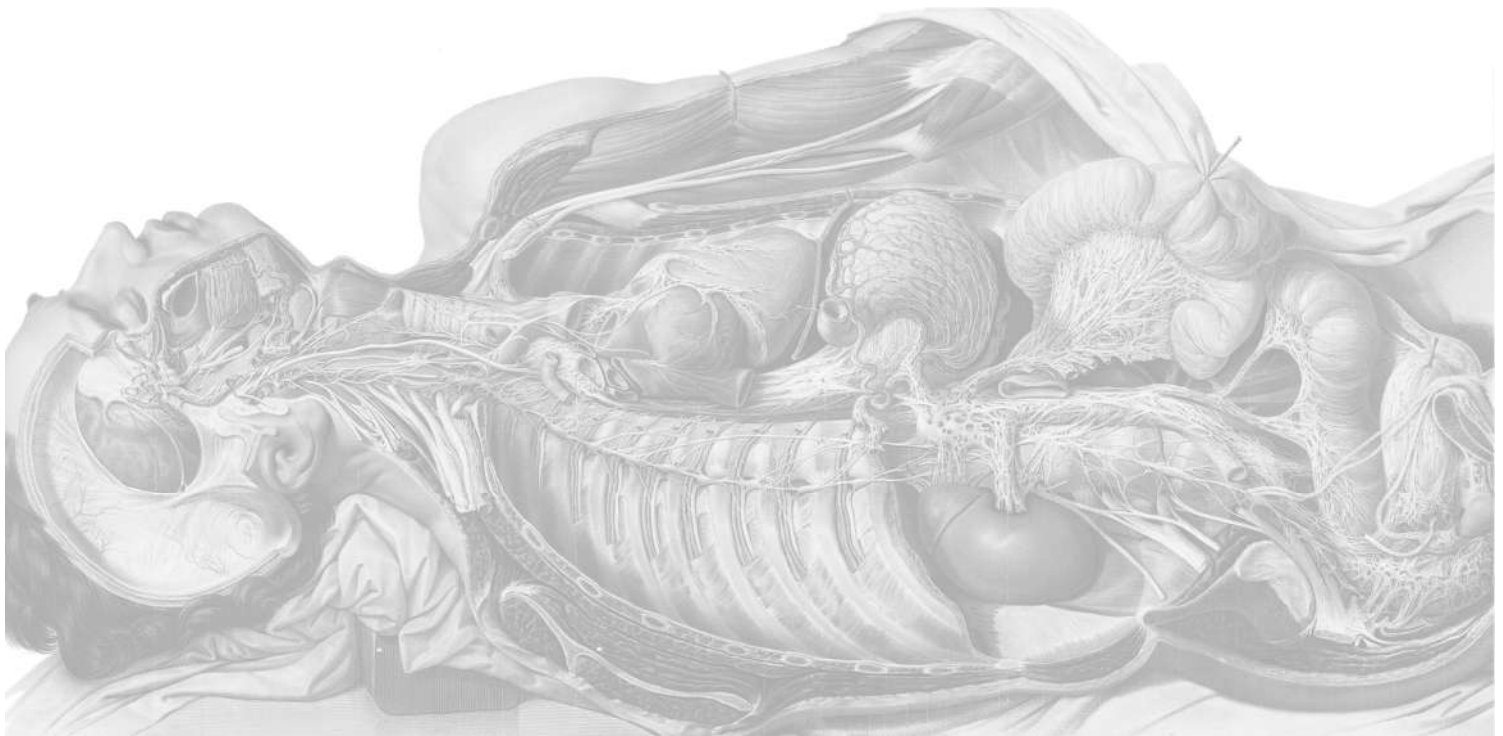
2. Obturator hernia

Definition	It is a hernia occurring through obturator canal between superior ramus of pubis and obturator membrane. • It is a rare entity, seen in elderly females (6: 1 ratio female to male).
CP	<p>◈ Usually presents with features of <u>Intestinal obstruction</u> (85%) and more often confirmed only on laparotomy.</p> <p>◈ Rarely seen as a swelling in femoral triangle (20%) deep to the pectineus muscle, with limb in flexed and abducted position → Movement of limb is painful.</p> <p>◈ Referred pain in knee joint through geniculate branch of obturator nerve signifies not only obturator hernia but also strangulation → Howship-Romberg sign (50%). MCQ</p> <p>◈ Here strangulation is usually of Richier's type.</p>
Treatment	<p>- Laparotomy is done and the sac is identified. It is dissected and ligated.</p> <p>- If strangulation is present (common), resection and anastomosis is done.</p> <p>- Broad ligament is stitched over the opening to prevent recurrence.</p> <p>- Mesh placement is the ideal way of repairing the obturator defect.</p>

3. Lumbar hernia

Definition	Hernia that occur in the Lumbar region through the posterior abdominal wall.
Types	<p>1. Primary lumbar hernia: - It Occurs through the superior or inferior lumbar triangle.</p> <p>2. Secondary lumbar hernia: - It Occurs on top of previous lumbar incision → Incisional lumbar hernia following an operation upon infected kidney.</p>
Anatomy	<p>• Boundaries of <u>Superior</u> lumbar triangle: ▲ Grynfelt triangle▲</p> <ol style="list-style-type: none"> Superiorly: last rib Medially: Sacro-spinalis muscle Laterally: Latissimus dorsi & IOM <p>• Boundaries of <u>Inferior</u> lumbar triangle: ▲ petit triangle▲</p> <ol style="list-style-type: none"> Interiorly (Base): Iliac crest Medially: Latissimus dorsi laterally: EOM <p>N.B</p> <p>- <u>Superior</u> lumbar triangle is larger than <u>inferior</u> lumbar triangle. So, it is commonly to be affected.</p>
C/P	◈ Lump in the flank with dull heavy feeling . DDx: Lipoma
Treatment	• Repair using mesh

4. Sciatic hernia	
	Hernia that occur through the lesser sciatic foramen.
5. Gluteal hernia	
Definition	Hernia that occur through the Greater sciatic foramen.
C/P	<ul style="list-style-type: none"> ❖ Sciatica: due to compression on sciatic nerve. ❖ Swelling in gluteal region. ❖ Intestinal obstruction.
Ix	CT scan
Treatment	<ul style="list-style-type: none"> ☑ Sure diagnosis & Reducible hernia → <i>Trans-gluteal</i> approach. ✗ Doubtful Dx. & Obstructed hernia → <i>Trans-peritoneal</i> approach
6. perineal hernia	
Definition	Hernia through pelvic floor
Types	<p>1. Primary:</p> <ul style="list-style-type: none"> a. Medial sliding perineal hernia: Complete prolapse of the rectum b. Antero-lateral perineal hernia: occurs in <i>women</i> and presents as a swelling in the labium majus. c. Postero-lateral perineal hernia: Enter ischio-rectal fossa <p>2. Secondary:</p> <p>Occurs through a perineal scar following abdomino-perineal resection of cancer rectum.</p>
C/P	<ul style="list-style-type: none"> ❖ Anteriorly located → dysuria ❖ Posteriorly located → Painful sitting
Treatment	Mesh Repair through <i>trans-abdominal</i> approach or combined <i>trans-abdominal</i> and <i>perineal</i> approach.



Complications of hernia surgery

<p>Complications of <i>open</i> hernia surgery</p>	<ul style="list-style-type: none"> • Infection • Groin pain; osteitis pubis • Ischemic orchitis → due to thrombosis of pampiniform venous plexus (0.5%) • Injury to vas • Injury to viscera • Recurrence • Hydrocele formation • Seroma, hematoma • Inguinodynia • Dys-ejaculation → painful, burning sensation just before/ during/ after ejaculation due to cremaster dysfunction or vas stricture. 				
	<table> <tr> <th data-bbox="394 947 938 982">Immediate</th><th data-bbox="938 947 1484 982">Late/delayed</th></tr> <tr> <td data-bbox="394 982 938 1465"> <ul style="list-style-type: none"> • Vascular → injury to iliac vessels/IE vessel. • Visceral injury → bowel/bladder • Vas injury • Anaesthetic complications </td><td data-bbox="938 982 1484 1465"> <ul style="list-style-type: none"> • Seroma/hematoma • Neural complications • Intestinal obstruction • Bowel adhesions/fistula • Testicular atrophy • Mesh related complications • Recurrence </td></tr> </table>	Immediate	Late/delayed	<ul style="list-style-type: none"> • Vascular → injury to iliac vessels/IE vessel. • Visceral injury → bowel/bladder • Vas injury • Anaesthetic complications 	<ul style="list-style-type: none"> • Seroma/hematoma • Neural complications • Intestinal obstruction • Bowel adhesions/fistula • Testicular atrophy • Mesh related complications • Recurrence
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<p>Complications of TEP/TAPP</p>	<ul style="list-style-type: none"> • SC emphysema • Pneumothorax, hypercarbia • Vascular • Neural • Visceral • Infection, ileus • Conversion • Recurrence 				

Hernia Clinical tests	
1. Scrotal neck test	<ul style="list-style-type: none"> ✿ To differentiate between Inguinal & Inguino-scrotal & Pure Scrotal swelling ✿ It is done Bilaterally comparing both cords <i>at the same time</i>. ✿ Normally, we feel the <u>vas as cord like structure</u> and any additional structure felt is considered Abnormal. 1. If we can get above the swelling → Pure scrotal swelling 2. If we can get below the swelling → Inguinal 3. If we cannot get above or below the swelling → Inguino-scrotal swelling. [i.e. the swelling is in-between our fingers]
2. Pubic tubercle test	<ul style="list-style-type: none"> ✿ To differentiate between the all types of Groin hernias: ✿ If the Neck of the swelling: <ul style="list-style-type: none"> 1. Above & Lateral → DIH 2. Above & Medial → IIH 3. Below & Lateral → Femoral hernia 4. Below & Medial → Obturator hernia
3. Deep ring test	<ul style="list-style-type: none"> ✿ To differentiate between DIH & IIH • Fallacies of this test: <ul style="list-style-type: none"> 1. Patulous deep ring 2. pantaloons hernia 🔊 Important test in Clinical exam.
4. SR test	<ul style="list-style-type: none"> ✿ To differentiate between DIH & IIH but Preferably not to be done as: <ul style="list-style-type: none"> 1. It is painful to the pt. 2. It widens the Ring 3. There is another test (DRT) more accurate & has the same value.

Important Oral Questions on Hernia

1 | How to identify the **neck** of the sac during herniotomy?

- By *extraperitoneal* fat
- It is the *narrowest* part of the sac
- it is lateral to IEA

2 | *Femoral* Hernia is the commonest hernia to **strangulate**?

1. *Sharp edge* of **lacunar** ligament
2. Usually *irreducible*
3. *Narrow* neck
4. Long *tortuous* course: Downward ↘ & forward → & upward ↗ and laterally

3 | *Femoral* hernia is more common in *females*?

1. *Wide* pelvis → **Wide** femoral **ring**
2. Pelvic tilt **downwards** ↘ in female → allows easier descent
3. Attenuated *iliopsoas* muscle in females → *Wider* Ring & Canal
4. Increased IAP due to repeated pregnancy.

4 | What are the **types** of *Herniorrhaphy* you know?

1. Modified *Bassini's* repair
2. *Lytle's* repair
3. *Shouldice* repair
4. Modified *Shouldice* repair
5. *Mc vay's* repair

⊗ What is the reason of their high recurrence rate?

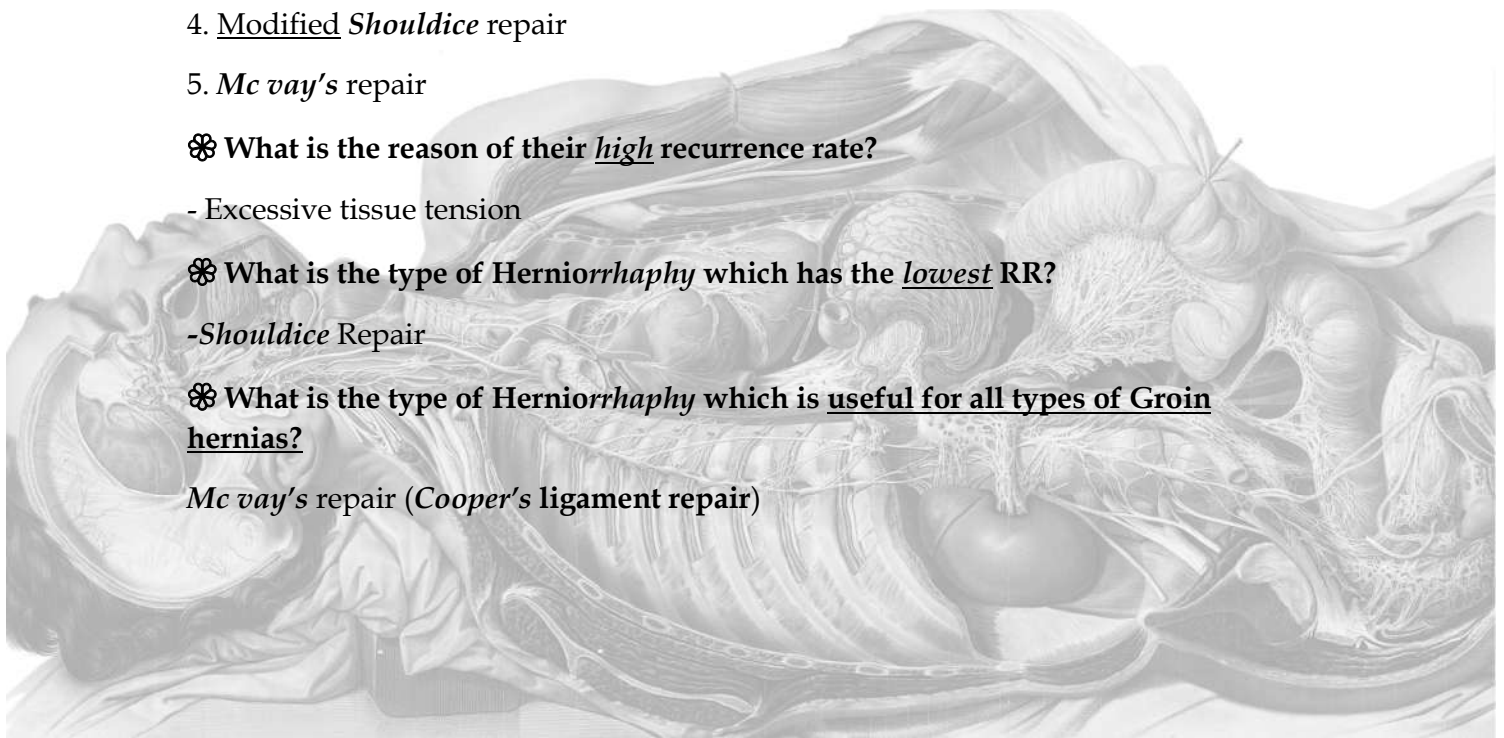
- Excessive tissue tension

⊗ What is the type of *Herniorrhaphy* which has the lowest RR?

- *Shouldice* Repair

⊗ What is the type of *Herniorrhaphy* which is useful for all types of Groin hernias?

Mc vay's repair (*Cooper's* ligament repair)



5 What is your diagnosis?

- Rt. oblique inguinal hernia, uncomplicated, containing intestine (omentum), no other hernias, no predisposing factors.

Q. Why this is a hernia?

- A.** Because:
- 1) It is a swelling at the anatomical site of a hernia.
 - 2) Gives an impulse on cough
 - 3) It is (or was) reducible on lying down and by the patient fingers.

Q. Why inguinal and not a femoral hernia?

- A.** Because:
- 1) the hernia is above the inguinal ligament and not below it
 - 2) the neck of the hernia is above and medial to the pubic tubercle
 - 3) the hernia descends into the scrotum.

Q. Why oblique and not direct?

- A.** Because:
- 1) it descends into the scrotum,
 - 2) On doing the internal ring test, there was no swelling to appear on coughing while occluding the DIR.
 - 3) The patient is a young male.

Q. Why you did not do the external ring test?

- A.** Because it is painful.

Q. Can a *direct* hernia descend into the scrotal sac?

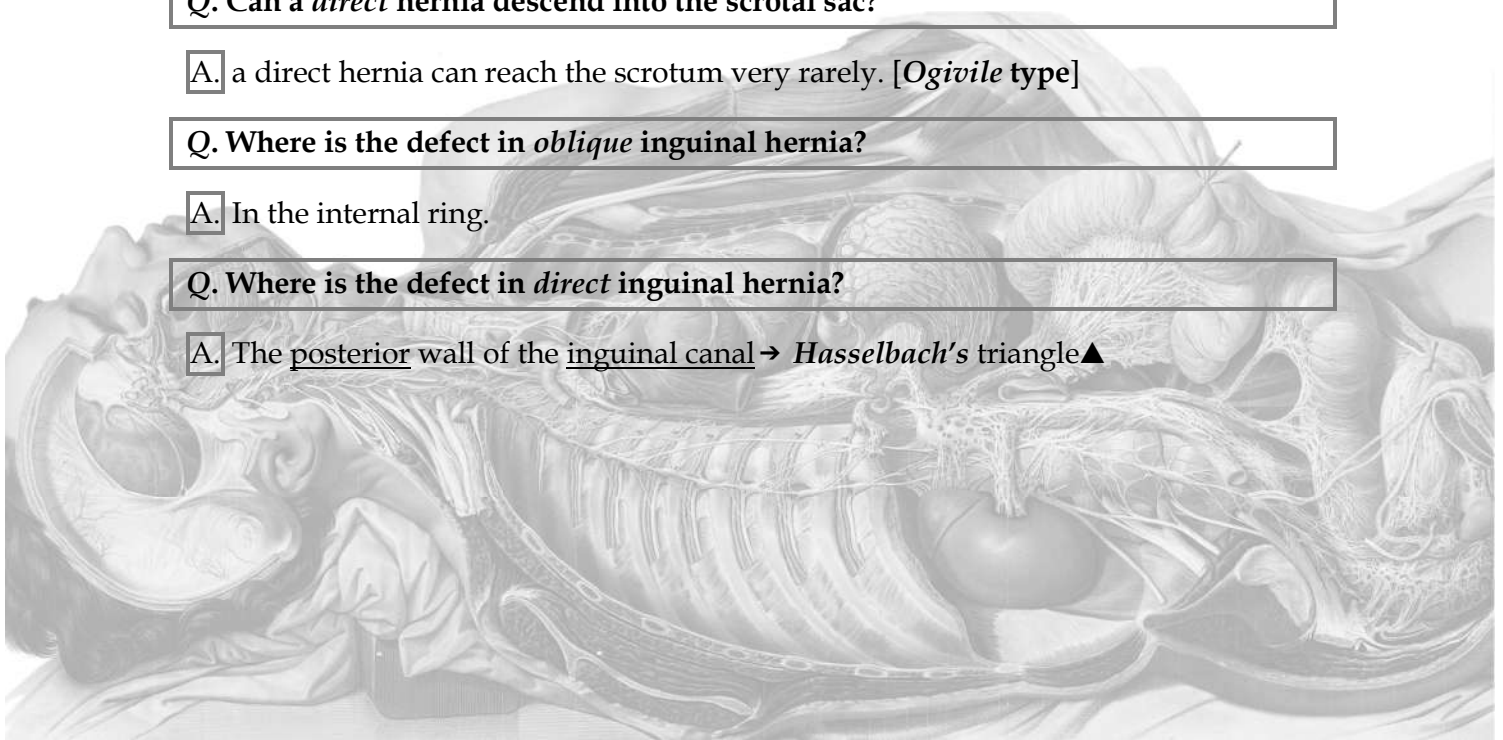
- A.** a direct hernia can reach the scrotum very rarely. [*Ogivile type*]

Q. Where is the defect in *oblique* inguinal hernia?

- A.** In the internal ring.

Q. Where is the defect in *direct* inguinal hernia?

- A.** The posterior wall of the inguinal canal → *Hasselbach's triangle*▲



Q. What are the boundaries of *Hasselbach's triangle*▲?

- A. 1. Lateral border of the rectus abdominis muscle **medially**.
2. Inferior epigastric artery **laterally**.
3. Inguinal ligament **inferiorly**.

Q. What are the *subdivisions* of *Hasselbach's triangle*▲?

- A. Hasselbach's triangle is subdivided into *medial* and *lateral* parts by means of the *medial umbilical ligament*.

Q. What are the common *contents* of a hernia in general?

- A. Intestine, omentum and fluid

Q. Mention the clinical *types* of *oblique inguinal hernias*?

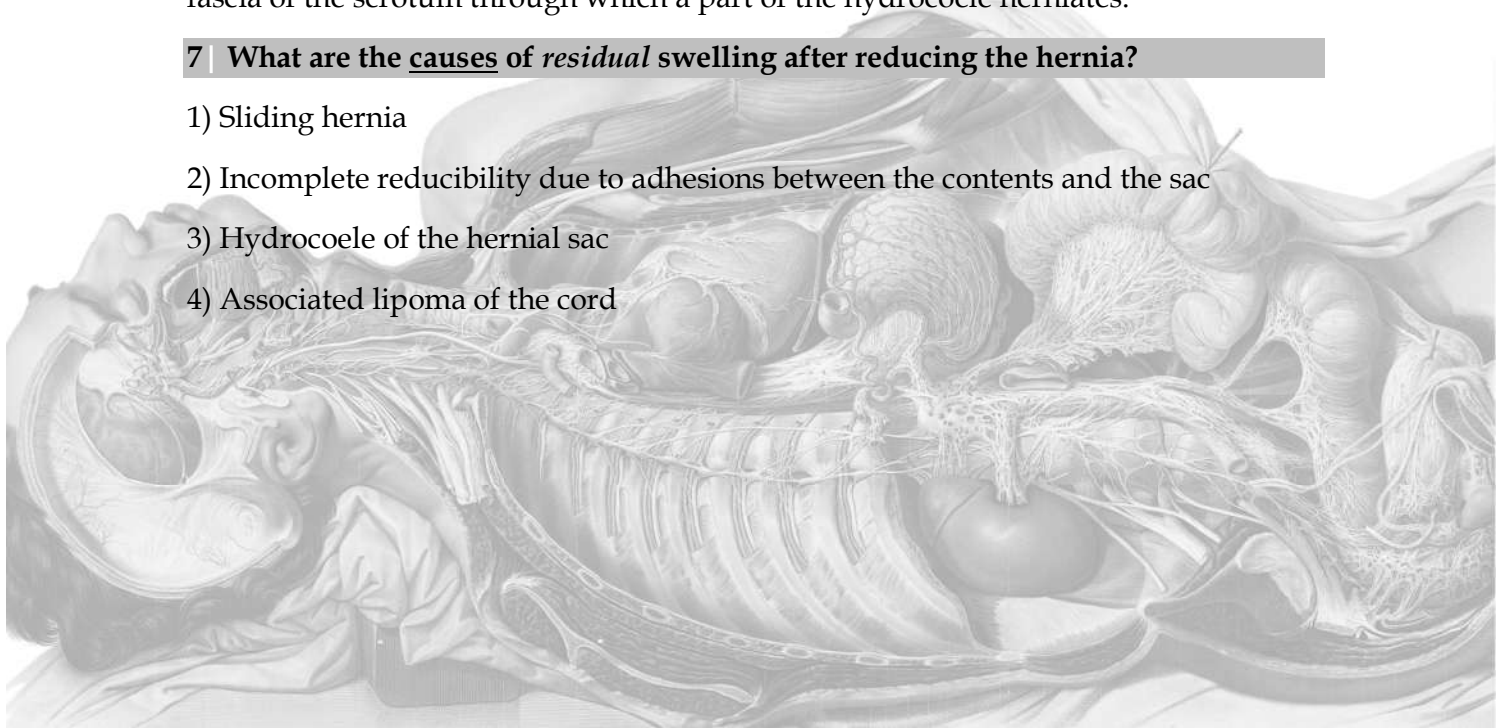
- A. 1. *Bubonocoele* Hernia is only in the groin.
2. *Funicular* type Hernia descends into the scrotum but the testis is felt separate from the hernial sac.
3. *Scrotal (complete)* type → Hernia descends into the scrotum and the hernial sac surrounds the testis which is not felt through the contents of the hernia.

6 | What is *hydrocoele of the hernial sac*? and what is *hernia of hydrocoele*?!

- Hydrocoele of the hernial sac: Part of the sac near its neck becomes encysted by a piece of omentum and accumulates fluid.
- Hernia of hydrocoele: In cases of vaginal hydrocoele, a defect occurs in the dartos fascia of the scrotum through which a part of the hydrocoele herniates.

7 | What are the causes of *residual swelling* after reducing the hernia?

- 1) Sliding hernia
- 2) Incomplete reducibility due to adhesions between the contents and the sac
- 3) Hydrocoele of the hernial sac
- 4) Associated lipoma of the cord



8 | How would you *clinically differentiate* between obstructed and strangulated hernias?

- This is difficult *because* both are **very acute conditions** with the hernia being **painful, irreducible & tender**. (دي أهم جملة)
- **Impulse on cough is preserved** in *obstructed* but is **lost** in *strangulated* hernias.
- The hernia is **tense** in *strangulation* but **not** in *obstruction*.
- **Symptoms and signs of intestinal obstruction** are **present** in *obstructed* hernias and **maybe present** in *strangulated* hernias.

9 | What are the conditions that you may find strangulation without obstruction?

- If the content of the hernia is one of the following:
 1. Omentum
 2. Part of the circumference of the intestinal lumen (*Richter's* hernia)
 3. Michael's diverticulum (*Littre's* hernia)
 4. Fallopian tube & ovary
 5. Appendix (*Amaynd* hernia)

10 | What are the causes of *recurrence* of a hernia?

1. Untreated preoperative condition:

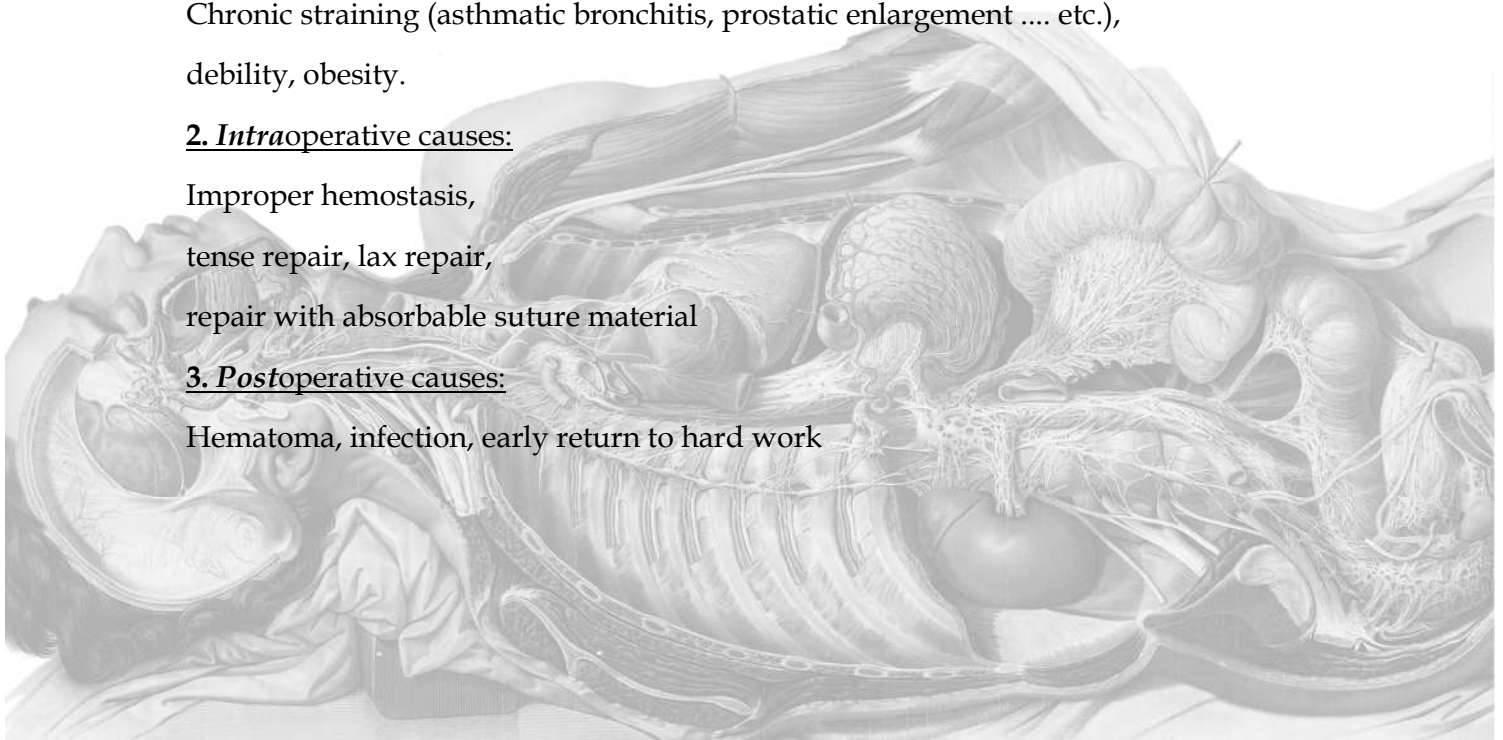
Chronic straining (asthmatic bronchitis, prostatic enlargement etc.), debility, obesity.

2. Intraoperative causes:

Improper hemostasis,
tense repair, lax repair,
repair with absorbable suture material

3. Postoperative causes:

Hematoma, infection, early return to hard work



11 | What is your diagnosis?

- *Paraumbilical* hernia, *uncomplicated*.

Q. What are the types of *umbilical* hernias you know?

A. 1. *True* umbilical hernias:

- Congenital* umbilical hernia (exomphalos major and minor)
- Infantile* umbilical hernia (from weak umbilical cicatrix)
- Adult* umbilical hernia (from increased intrabdominal pressure)

2. *Paraumbilical* hernias: due to *defect* in linea alba close to umbilicus:

- 1) *Supraumbilical*
- 2) *Infraumbilical*

Q. How can you differentiate between the *UH* & *PUH* ?

A. By the shape of the umbilicus:

1. *UH* → Normal but **everted**
2. *PUH* → **Distorts** the shape of the umbilicus (*Crescent* shape)

Q. Is it common for patients with *PUH* to complain of dyspepsia?

A. Yes.

Q. Why?

A. Due to traction on the greater omentum which is commonly the content of such a hernia.

Q. What is the commonest complication of *paraumbilical* hernia?

A. Irreducibility, due to marked adhesions between the contents & multilocular sac.

Q. What is the danger of such irreducibility?

A. It predisposes to obstruction and strangulation.

Q. What type of repair do you do?

A. It varies according to the size of the defect as follows:

- Very small defect → *Anatomical* repair
- Small to Moderate defect → *Mayo's* repair
- Moderate to Large defect → *Hernioplasty* (*prolene* mesh)

Q. How do you clinically differentiate between a *paraumbilical* and an *epigastric* hernia?

A.

- In *paraumbilical* hernia: the defect is close to the umbilicus so that the umbilicus forms a *crescent* at the edge of the sac.

- In *epigastric* hernia: there is a bridge of normal abdominal muscles between the defect and the umbilicus & Umbilicus normal in shape.

Besides, *epigastric* hernia could be *multiple*

12 | "Groin" hernia refers to which three hernias?

Direct and *indirect inguinal* hernias and *femoral* hernias.

13 | What is the anatomic name of the *Poupart* ligament?

Inguinal ligament, which is a key element in most groin hernial repair.

14 | For what groin area is the *Lichtenstein* repair not appropriate?

Femoral hernia.

15 | What is the common fascial defect of larger indirect and all direct inguinal hernias?

Weakness or attenuation of the transversalis fascia.

16 | What is a sliding hernia?

A sliding hernia is formed when a *retroperitoneal* organ constitutes a side of the hernia sac.

Q. What organs can be found in sliding hernias?

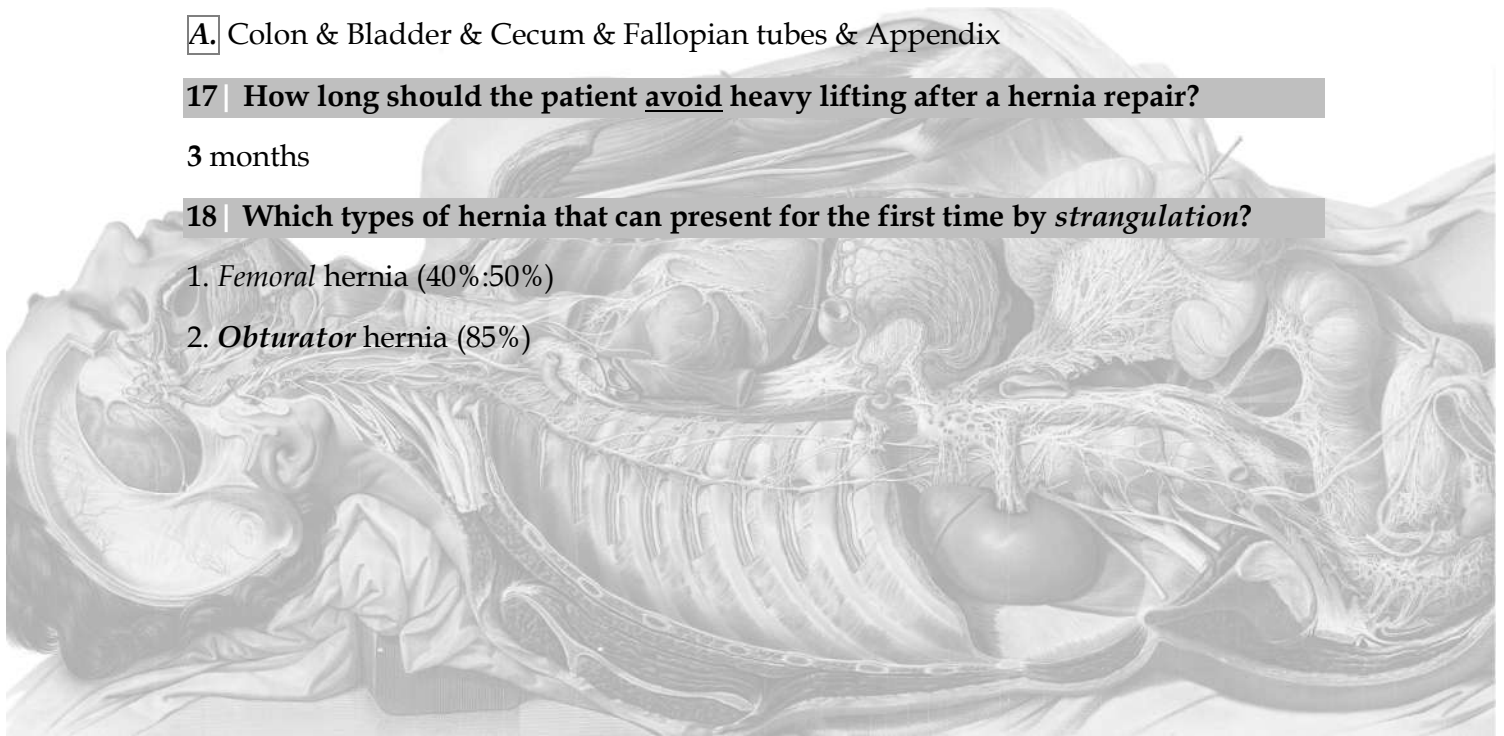
A. Colon & Bladder & Cecum & Fallopian tubes & Appendix

17 | How long should the patient avoid heavy lifting after a hernia repair?

3 months

18 | Which types of hernia that can present for the first time by *strangulation*?

1. *Femoral* hernia (40%:50%)
2. *Obturator* hernia (85%)



19 | Which types of hernia that can be diagnosed surely only intraoperatively?

1. *Sliding* hernia
2. *Pantaloon* hernia
3. *Litter's* hernia
4. *Richter's* hernia
5. *Amayld* hernia
6. *Maydel's* hernia

20 | How to suspect a sliding hernia clinically?

1. By History:

- History of *long-standing* hernia
- If the sliding organ is **UB**:
 - a. Double micturition
 - b. the patient feels a desire to micturate when
 - c. it decreases in size after micturition.

2. By Examination:

- The hernia is partially irreducible: residual swelling after reduction of hernia
- Pressure on the hernia causes desire of micturition

☑ The Sure Diagnosis of Sliding hernia is *intraoperative*.

21 | *Lichtenstein* repair is tension free. why?

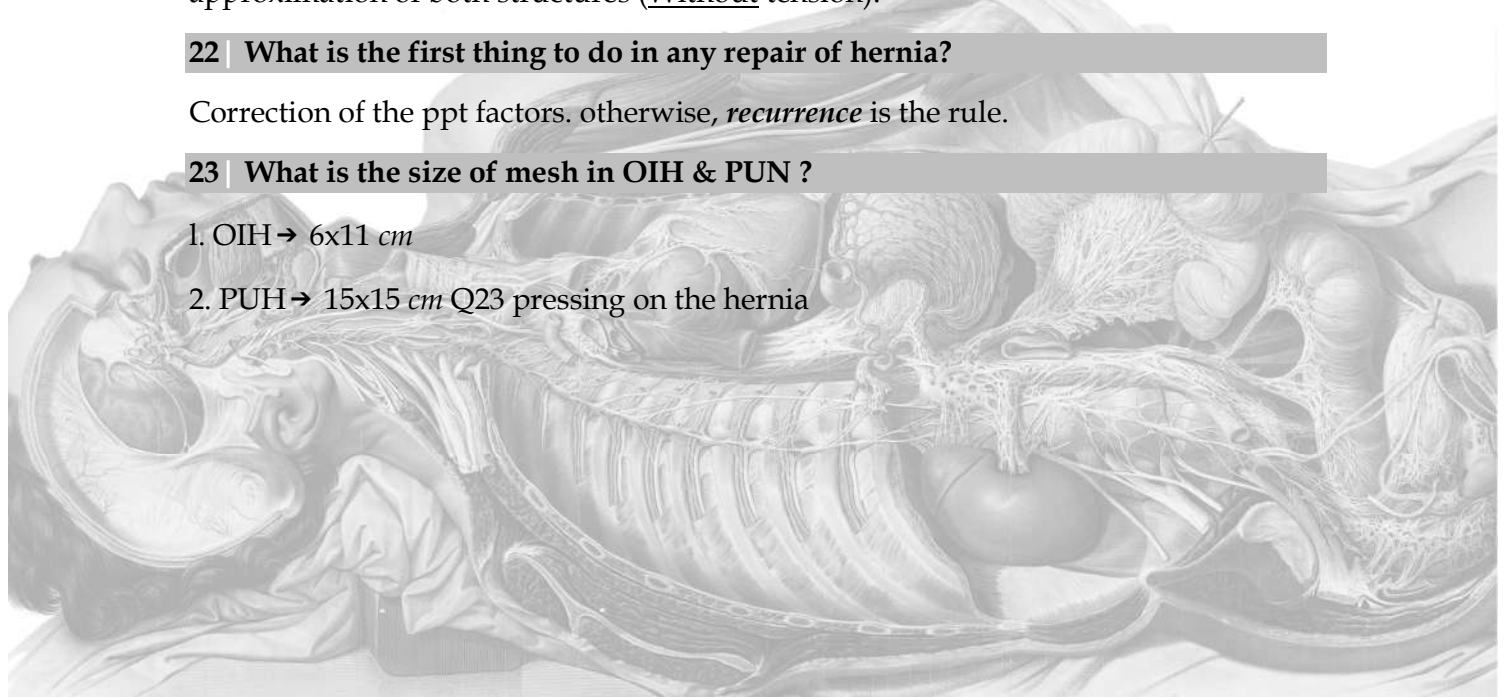
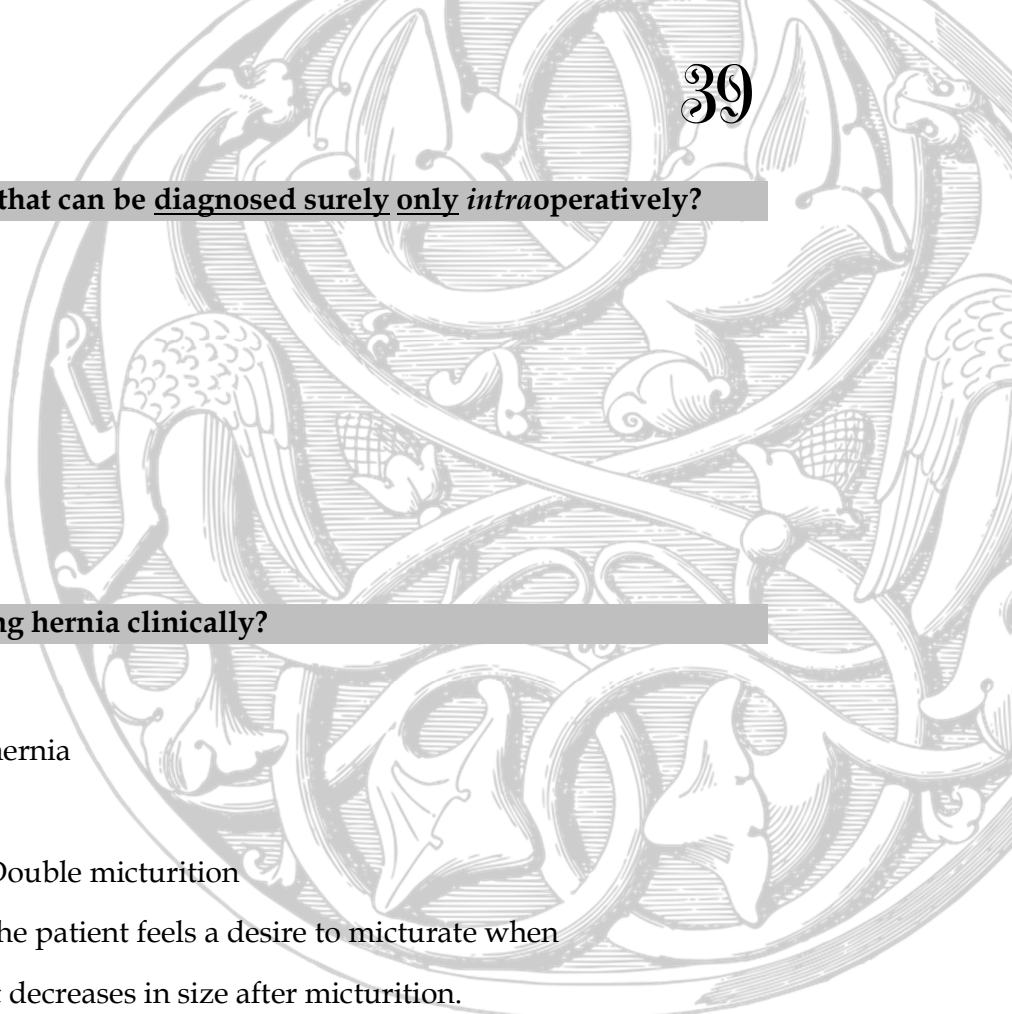
Because the mesh is sutured to both the inguinal ligament & conjoint tendon without approximation of both structures (Without tension).

22 | What is the first thing to do in any repair of hernia?

Correction of the ppt factors. otherwise, *recurrence* is the rule.

23 | What is the size of mesh in OIH & PUN ?

1. OIH → 6x11 cm
2. PUN → 15x15 cm Q23 pressing on the hernia



24 | What is the sites of mesh placement? IMP

1. Onlay 2. Inlay 3. Sublay 4. Underlay (for details See before)

Q. What is the sites of mesh placement in *Lichtenstein* repair?

A. Onlay: In *front* of fascia transversalis & *behind* the cord.

25 | You have a case of recurrent OIH, what is the options of ttt? Choose the best one and tell why?

1. Laparoscopic repair (TEP/TAPP).

2. Bilateral *Lichtenstein* repair: same setting or 2 setting with 6 months apart.

3. *Stoppa-Rives* repair: placement of mesh in the preperitoneal space through infraumbilical midline inclusion or pfannenstiell incision. (يحيط مش بعرض البطن)

⊗ The best is → **Laparoscopic repair (TEP/TAPP)**

because it is a different approach. As the anatomy of the site of primary surgery is distorted and the rate of complications & recurrence rate will be high.

26 | If you clinically diagnosed this case as a *strangulated* OIH with gangrenous content and *intraoperatively* you found that the content is viable.

What will you do?

I should do a slight traction on the nearest loop to get some length of the intestine out for inspection as it may be a case of *Maydel* hernia.

27 | Hernia is usually painless. When the hernia is *painful*?

1. *Early* case → Stretch of FT

2. Complicated hernia → Any complications

3. *Dragging* pain → in case of Large complete OIH

4. *Dyspeptic* pain In PUH → due to traction on the greater omentum.

28 | How to differentiate Between DIH & IIH *intraoperatively*?

By the relation of neck of the sac to IEA:

1. DIH → *Medial* to IEA

2. IIH → *Lateral* to IEA

29 | If you have a case of both OIH & PUH. Which hernia you will repair first? and why?

- PUH, as it is more liable for complications.

30 | If you have a case of both OIH & FH. Which hernia you will repair first? and why?

- **Both**, as they will be repaired through the same approach.

31 | If you found the appendix as one of the contents of hernia. would you remove it?

- If it is not inflamed → we should leave it to avoid soiling of the field.

- If it is *inflamed* → we remove it.

Previous years *Essay Qs* on hernia

◇ Give a short account on the types and complications of *ventral* hernias **V.imp.**

◇ Enumerate different types and describe the main clinical features of *adult midline abdominal wall* hernia

◇ Discuss the predisposing causes of *incisional* hernia and describe treatment

◇ Write a brief account on the pathology, clinical features and treatment of *strangulated* hernia. **V.imp.**

◇ Mention the clinical picture and management of *strangulated* **inguinal** hernia.

◇ Clinical picture, diagnosis and treatment of *strangulated* **femoral** hernia.

◇ Mention the differential diagnosis of an *inguinal swelling*.

◇ Outline the differential diagnosis of a **swelling in the femoral triangle**.

